

# **The American Journal of Pharmaceutical .... Education ....**

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**THE OFFICIAL PUBLICATION OF THE AMERICAN  
ASSOCIATION OF COLLEGES OF PHARMACY**

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## **PROGRAM NUMBER**

**"With the continued rapid advance in medication, the profession of pharmacy has come to have a place of critical importance in modern life. It is essential that the profession be maintained so as to render the highest possible service."—**

**George F. Zook.**

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***Number 3***

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## A Survey of Pharmaceutical Education in the United States\*

AMERICAN COUNCIL ON EDUCATION  
EDWARD C. ELLIOT, DIRECTOR

Pharmacy has assumed a role of increasing importance in the constantly expanding public health program of the United States. Dr. W. W. Charters, in the report entitled "Basic Material for a Pharmaceutical Curriculum," published more than a decade ago, stated that "pharmacy is a profession rather than a trade." Dr. Charters states further in his report, "The materials that the pharmacist deals with are in many cases so dangerous in their effects upon physical well-being, and the problems that face him in the handling of these materials and in his contacts with the public require so much intelligence—if they are properly performed—that it is absolutely essential for him to have a rather wide and intimate acquaintance with the fundamental sciences upon which the art depends; and since the distinction between the trade and the profession lies essentially in the fact that the trade needs to know only the methods in order to be proficient while the profession needs to know the principles upon which the methods depend, it follows that pharmacy is a profession rather than a trade."

Because of the important role that pharmacy plays in American life, because pharmaceutical services are constantly being expanded, and because pharmaceutical education has expanded, until there are at present approximately 65 schools of pharmacy in the country, it is important that a study be made of pharmacy and pharmaceutical services to include some or all of the following areas:

1. AN ANALYSIS OF PRESCRIPTIONS TO DETERMINE THE KNOWLEDGE REQUIRED IN COMPOUNDING THEM.

This would require the assembling of prescriptions and an analysis of them to the point at which it appears that all

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\* By a vote of the Committee on the Pharmaceutical Survey, at its meeting on June 26 in Washington, D. C., there is sent herewith a copy of the plan indicating the purposes and scope of the Survey as originally prepared by the American Foundation for Pharmaceutical Education and the American Council on Education.

It was believed by members of the Committee that this plan should be widely known to all the members of the pharmaceutical profession.—Edward C. Elliot.

forms of compounding ordinarily required have been identified. A technique similar to this was employed by Dr. Charters in the study of pharmacy which he made a number of years ago.

2. A STUDY OF THE ACTIVITIES ENGAGED IN BY PHARMACISTS.

This part of the study would endeavor to determine to what extent pharmacists actually devote themselves to the preparing of compounds and in filling prescriptions, the handling of drugs, medicines, and health supplies and all other phases of pharmaceutical practice—also to what extent they engage in the actual business management of their organization, and to what extent they engage in other types of activity, both within and without the drug store, with special reference to other professional, business, civic, or commercial affairs, and the aptitudes and training needed to perform properly these services.

3. AN ANALYSIS OF THE GENERAL KNOWLEDGE THAT A PHARMACIST SHOULD HAVE REGARDING PHARMACEUTICAL PRODUCTS AS INDICATED BY INFORMATION REQUESTED BY MEMBERS OF THE MEDICAL PROFESSION AND QUESTIONS ASKED BY CUSTOMERS.

The large increase in ready-prepared pharmaceutical compounds imposes upon the pharmacist the responsibility of being fully informed concerning the relative merits of such products in order that he may give safe, correct, and intelligent advice. The kinds of knowledge which a pharmacist should have can be arrived at by assembling and summarizing information requested by members of the medical profession and questions asked about these preparations by purchasers.

4. A STUDY OF NEW FIELDS OF PHARMACEUTICAL SERVICE WITH THEIR IMPLICATIONS BOTH FOR TRAINING AND FOR EMPLOYMENT.

Like many other professions, the scope of pharmaceutical services is undoubtedly being extended in a number of directions. It is important to know what new fields of specialization have developed with a view to determining the extent to which these developments indicate a need for change in future pharmaceutical education.

5. A STUDY OF THE ROLE OF PHARMACY IN MEDICAL CARE.

The relationship of pharmaceutical services to physicians, dentists, veterinarians, hospitals, clinics, and other agencies of medical care needs to be analyzed with a view to discovering whether there are special implications for either pharmaceutical education or pharmaceutical practice.

6. AN EVALUATION BY PHARMACY GRADUATES OF THEIR PREVIOUS TRAINING IN RELATION TO ACTIVITIES IN WHICH THEY ENGAGE.

The graduate pharmacist is particularly able to evaluate his previous training in relations to the types of service he is called upon to render. Educational institutions that employ the technique of asking graduates to evaluate their training have, through this procedure, received many valuable suggestions for improving their programs.

7. A STUDY OF SUPPLY AND DEMAND OF TRAINED PERSONNEL IN THE FIELD OF PHARMACY.

With a view to determining the extent to which facilities for pharmaceutical education should be extended, it is necessary to forecast as accurately as possible the number of trained pharmacists that will be called for in the immediate future in relation to the number that can actually be prepared with existing facilities.

8. THE RELATIONSHIP OF PHARMACEUTICAL EDUCATION TO BUSINESS AND INDUSTRY—HOW THE EDUCATION CAN BE MORE CLOSELY INTEGRATED WITH PRACTICAL EXPERIENCE.

There is a marked trend at the present time in various phases of professional education toward the provision of practical experience along with theoretical training. This is really an extension of the principle of internship which has for some time been employed in the field of medical education. A study needs to be made of the practicability of introducing experience in the field of pharmacy as a part of the total program of professional pharmaceutical education.

9. PROVISIONS FOR THE GUIDANCE OF PHARMACEUTICAL STUDENTS WITHIN THE PHARMACEUTICAL COLLEGES.

One of the most important aspects of professional education, and one which is most frequently neglected, is the provision of adequate counsel to students who plan to enter the professions. This is undoubtedly quite as true of pharmacy as it is of medicine, dentistry, and other fields. The study

should, therefore, include the facilities that colleges of pharmacy have for aiding students in evaluating their own personal and intellectual capacities in relation to various opportunities for specialization in pharmacy. In making this study consideration will be given to various types of tests and examinations that may be used for the purpose of advising students and to information about the various fields of specialization which may appropriately be chosen by individuals possessing requisite intellectual qualifications and personality traits.

10. THE ESTABLISHMENT OF CRITERIA FOR THE SELECTION OF PHARMACY STUDENTS.

Not all students who apply for admission to a school of pharmacy possess the qualifications essential to success in a school of pharmacy or to success in a school of pharmacy or to success in the pharmaceutical field. As a means of aiding institutions in selecting students as well as aiding students in determining whether or not they should enter a school of pharmacy, certain minimum criteria of selection should be established. It is impossible to indicate in advance what these criteria should be, but they should certainly include a minimum level of general scholastic aptitude, certain personality qualifications, and probably special aptitude for the types of training required in a pharmacy program.

11. THE QUALIFICATIONS OF FACULTY MEMBERS AND THE CONDITIONS OF FACULTY SERVICE IN THE PHARMACEUTICAL COLLEGES.

The quality of an educational program in pharmacy, like the quality of an educational program in any other field, is dependent first of all upon the preparation of the faculty members and the conditions under which they work. Faculty competence could be determined in terms of formal training, contributions to professional literature, membership in learned societies, etc. The conditions of faculty service might include such matters as salaries, tenure, provisions for retirement, provisions for sabbatical leaves, etc. Whether or not this is an area that should be included in the survey would finally have to be determined by the survey committee and the director of the survey.

12. THE LEVELS OF EDUCATIONAL PREPARATION REQUIRED IN PHARMACEUTICAL SERVICES.

A number of the colleges of pharmacy have extended their educational programs above the bachelor's level, some offer-



ing the master's degree and a few offering the Ph. D. It is important both for the guidance of institutions that contemplate an upward extension of their educational programs and for the guidance of individuals who plan to do graduate work in the field to know what types of positions are now held by those who have received either the master's or the doctor's degree in pharmacy and what the future demand is likely to be with reference to individuals holding higher degrees in pharmacy. It will be equally important to investigate to what extent pharmaceutical organizations employ persons who hold higher degrees in fields of specialization other than pharmacy and what fields of specialization are represented. This part of the study should also throw light upon the kind of advanced preparation that proves most valuable in the fields of service in which those who hold the master's and doctor's degrees are commonly employed.

13. THE RELATIONSHIP OF REQUIREMENTS FOR LICENSES TO PROGRAMS IN PHARMACEUTICAL EDUCATION.

This part of the study will require an analysis of the requirements set by licensing boards, an investigation of the types of examinations that are given for the purpose of licensure, the variations, if any, in standards maintained in the several states, the provisions for reciprocity among states, the relationship between the knowledge and skill required to pass state examinations and the knowledge and skill developed in educational programs and other matters of a similar nature. Of fundamental importance to pharmaceutical education is the question whether licensing boards through their examinations tend to limit the scope and emphasis of educational programs or whether the examinations are constructed to measure the types of information and skill which the educational programs are designed to develop.

The areas just suggested are in no sense to be regarded as a final outline of the scope of the survey. They merely illustrate some of the phases of pharmaceutical services that should be explored with a view to discovering important implications for pharmaceutical education and for the improvement of pharmaceutical services to the public.

Plans for such a study were presented to the American Council on Education in 1929, but for various reasons the study was not undertaken. The American Association of Colleges of Pharmacy, at its annual meeting in September



1943, instructed its executive committee to study plans and arrangements for a survey of pharmacy which would supplement and bring up to date the study made by Dr. W. W. Charters from 1923 to 1927, already referred to.

The American Council on Education has again been asked to undertake this survey. Because of the importance of the project in our national life, the Council is interested in conducting the survey if satisfactory arrangements can be made for financial support and competent personnel.

While this survey has been initiated by the American Association of Colleges of Pharmacy, the Council assumes that it will be necessary to enlist the cooperation of other agencies having an interest in pharmaceutical educational practices. In fact, the Council has already addressed an inquiry to a number of agencies that would be directly concerned, and has received from most of these agencies cordial endorsement of the survey and an expression of willingness on their part to cooperate.

The following plan of organization and procedure is suggested. The American Council on Education will appoint a committee of about nine members on which will be represented the interests of education, state certifying or licensing boards, industry, pharmaceutical practitioners, government, civil and military, examining boards etc. This committee will be responsible for developing or approving plans and policies for the survey, for reviewing reports embodying the survey data, and for approving the conclusions and recommendations. A technical staff composed of a full time director and two assistants will be employed by the Council. The director and Staff members will be responsible for gathering data, preparing reports, and drafting conclusions and recommendations in accordance with the plans and policies approved by the committee on the survey. The reports in final form will be published by the American Council on Education. The plan for distributing the reports is to be decided upon when costs and resources can be determined. It is expected that the survey will require approximately three years. The report will be published as soon after it is received in final form as conditions will permit.

## Historical Research in Pharmacy

GEORGE URDANG

Director of the American Institute of the History of Pharmacy

Historical research in pharmacy is nothing else but the employment of the general rules of research on the subject of the development of pharmacy, *i.e.*, of the development of the provision, identification, examination, preparation, administration and distribution of drugs in all its phases including the respective scientific, technical, professional, legal, ethical and cultural bases, ramifications and relations.

What then is "research"? The Concise Oxford Dictionary (edition 1934) defines "search" as "look or feel or go over what may be found, or to find somewhat of which presence is suspected", while "research" is said to be "careful search or inquiry after or for; endeavor to discover facts by scientific study of a subject, course of critical investigation."

The main difference between search and research in the definitions above seems to me centered in the words "to find" and "to discover." In contrast to mere search, research always is based on intellectual processes. Its aim is the enrichment of knowledge. Its methods are the adaptation of known techniques to the respective special problem or research or the invention and employment of new ones, and the careful evaluation and statement of the results obtained. Its pursuit is impossible without vision, *i.e.*, the instinct for the proper way of questioning and proceeding, and it has to be preceded by a thorough collection and examination of all available data pertaining to the problem concerned.

As a matter of fact, this examination of the work done in the past is not some initial step to be passed over as quickly as possible, but a part of the research as such and even a very important one. Ways of thought and experiment abandoned too early by previous investigators or impracticable at the time concerned, may now offer opportunities of greatest significance. Seemingly promising methods and conclusions may already have been tested before and proved to be futile. The potential advantages of the research devoted to the history of a problem, however, are not restricted to the immediate practical possibilities mentioned. This research is re-

ward in itself. It places the student of science—the word student being used in its broadest sense in the midst of a continuous development and gives him the sensation of being a link in an endless chain with all the joy, confirmation and responsibility involved.

What has been the reason for the undeniable fact that, as far as research in science is concerned, this psycho-intellectual satisfaction mentioned has been enjoyed only by a very few, and genuine interest in the history of science in general and in the history of pharmacy in particular did not become a matter of self-evidence with all those who have been doing active research within the so-called exact sciences? In my opinion it is due, in some measure at least, to the custom to follow the historical development of the problem under consideration not in its entirety but only as far as it seems necessary for answering individual questions arising during the performance of the experimental research concerned. This in turn is responsible for the scattering of the historical dates and data in footnotes all over the respective reports instead of combining and completing them into a coherent story given the place and the designation of an "Historical Part" before the "Experimental Part". Certainly, when this method is followed, the footnotes will not disappear completely either. There will remain some of them in the "Experimental Part" and even the "Historical Part" will contain plenty of them. However, these footnotes, consisting mainly of source references etc., will then be of a merely subordinate nature and not a burial of valuable material without hope of resurrection.

The method suggested is neither new nor in any way revolutionary. It has been used to some extent, especially in theses of a pharmacognostical nature, the preparation of which is inconceivable without the study of old literature. At the University of Wisconsin School of Pharmacy, Dr. W. O. Richtmann, pharmacognosist as well as historian, has initiated and supervised several theses presenting an historical introduction.

It is understood that the late Dr. Kremers, Director of the Course in Pharmacy at the University of Wisconsin and father of systematical pharmaceutico-historical research and instruction in the U. S. A., cultivated the more extensive

study of the history of the problems to be dealt with in the theses of his students and favored the separate performance of the results of this study in form of introductory remarks followed by the report on the experimental work.

This procedure, however, has by no means been general. As far as pharmacy in this country is concerned, it remained almost a Wisconsin specialty. Naturally, the question could be asked, whether these historical essays concerning pharmacognostical or chemical problems and developments are of any importance to the history of pharmacy in particular. The answer is a threefold one.

1. The historically minded pharmacist is interested in the history of science in general although not to the same extent as in that of his special field.  
As far as these theses concern drugs or chemicals which are used as remedies an immediate pharmaceutical interest exists.
2. The history of science has to be known to the pharmacist, at least in a general way, in order to enable him to evaluate correctly the place and the part of pharmacy within the frame of general science.
3. The fact of pharmacists being the authors and pharmacy schools being the places of preparation of the theses concerned should make it understood that in contrast to investigations undertaken by other people at other places the part of pharmacy and pharmacists in the history of the problems concerned is paid special attention.

There is an example for the pharmaceutico-historical value of the extended study of the history of a problem to be dealt with in a thesis, and of its presentation as a separate essay, which in my opinion proves the usefulness of this procedure in an excellent way. It is the Docor thesis of the pharmacist Kurt Feinstein of Zürich (Switzerland) published in 1936 under the title "Theoretical and Practical Investigations concerning the Methods of Percolation in Connection with a Survey on the Development of Percolation" (*"Theoretische und praktische Untersuchungen über das Perkulationsverfahren nebst einem Ueberblick über dessen Entwicklung"*).

Of the 169 printed pages more than one third, namely 62, are devoted to the historical survey, the so-called general part (*"Allgemeiner Teil"*). This survey shows in an exemplary way how lack of scientific contact and of historical

knowledge prevented progress in the field under consideration.

"Progressive modifications", says Feinstein, "were often not recognized by the contemporaries. Later on they appeared once more as new discoveries."

Finally the study pays high tribute to the part played by American pharmacy in the development of the methods of percolation. In his conclusions Feinstein makes the following statement:

"In America . . . this method of extraction (percolation) spread very rapidly. It was steadily worked on and improved and finally superseded maceration completely. Thus the percolation came back to the countries of its origin [France and Germany] in an improved form as an 'American invention'." It proves the general interest which this historical study enlisted that there was a demand for, and quite a sale of, a separate reprint.

Naturally, this separation of the historical or general part of the investigation of a pharmaceutico-technical, pharmacognostical, chemical *etc.*, problem from its experimental or special part in a thesis is a step towards the thesis devoted entirely to historical research in the sciences concerned. Here the question arises about the scope of the history of pharmacy or, to put it in another way, about the real and definite subjects of the history of pharmacy. I have answered this question in detail in an address delivered before the Historical Section of the American Pharmaceutical Association in 1938<sup>1</sup>. In the first paragraph of the present article the answer has been briefly summed up. Hence the subject of the history of pharmacy is the development of pharmaceutical technique and of the materia medica and finally of everything belonging to the profession of pharmacy. It was comparatively late that theses dealing with historical pharmacy in the sense defined above were prepared at the universities and colleges by pharmacists.

As a matter of fact, for decades theses dealing with the history of drugs and with formularies of older times were prepared in Europe almost exclusively by students of medicine. The reason was a very simple one. Medicine has had

<sup>1</sup> The Idea and the Tasks of the History of Pharmacy. *Jour. Am. Pharm. Assoc.*, 27:909, 1938.



its place in academic life since the very beginning of the institutions which we now call universities, i.e. for about 1000 years. There had been developed and cultivated a tradition and an historical interest including therapy and, after all, the thesis was a prerequisite for graduation. Thus it was not amazing that under the direction of historically minded teachers historical problems, including such concerning drugs and formularies, were made subject of medical doctor theses. It is this fact which is responsible for such excellent publications as there have been turned out by students of Prof. Kobert, first in Dorpat and later in Rostock, *c. g.*, Ludwig Israelson, *The Materia Medica of Galen*, (1894) and Felix Rinne, *Scribonii Largi Compositiones* (1892).

One of the fundamental books concerning pharmacy, called by the pharmaceutical historian Schelenz "the first real treatise on pharmacy in a modern sense, "the *Compendium Aromatariorum*" of Saladin de Asculo written in the middle of the 15th. century has been reedited, translated and annotated in a medical Doctor thesis of Walther Zimmerman on the initiative of the then Professor of the History of Medicine at the University of Freiburg, and later Director of the Institute of the History of Medicine and Natural Sciences at the University of Berlin, Paul Diepgen. Doctor theses of a more pharmaceutico-historical than medico-historical character have been turned out furthermore under the leadership of the physicians Sudhoff and Sigerist, the latter succeeding the former as Director of the Institute of the History of Medicine at Leipzig and since 1931 Director of the Institute of the History of Medicine at Johns Hopkins University at Baltimore which under his guidance has become a medico-historical world center.

When finally pharmacy students were given the opportunity of academic thesis work in their capacity as pharmacists, there were only a very few teachers who were historically minded and themselves informed and interested enough, to use this opportunity for research in the history of pharmacy.

It was in Spain and in France where Doctor theses based on pharmaceutico-historical research were prepared by pharmacists as early as in the late nineteenth century becoming quite frequent, especially in France, in the twentieth century. In Germany it was not until 1933 that the first

pharmaceutico-historical Doctor thesis was presented by a pharmacist. He did it at the University of Halle-Wittenberg in partial fulfilment of the requirements for the Degree of *Doctor Scientiae Naturalis* with a major in Pharmacy. It is significant that the faculty of the Department of Science, in which the Dean of the Pharmaceutical Institute was only one among the many representatives of the various branches of Science (botany, chemistry, physics, biology, zoology *etc.*) by unanimous vote rewarded this thesis with the mark "excellent". This distinction was all the more remarkable as the faculty had not attributed it to any thesis in all the fields concerned for more than ten years.

In Switzerland the former Director of the Pharmaceutical Department of the University of Basel, Heinrich Zörnig, assisted by the Professor of the History of Pharmacy at the same University, Joseph Anton Häfliger has made Doctor dissertations dealing with the history of various medical plants a specialty of his school. These dissertations represent primarily historical botanico-pharmacognostical research, although, naturally, containing details of special pharmaceutico-historical interest.

In the U. S. A. the undergraduate thesis having been an early requirement for graduation in Colleges of Pharmacy, an opportunity was given for pharmaceutico-historical thesis written by undergraduates, and it can be said that this opportunity has been used. Perusing the list of Ph.G. and Pharm. D. theses presented at the Philadelphia College of Pharmacy, we find as early as 1852 a thesis on "Progress of Chemistry", followed in 1866 and 1867 by theses on "The Dawn of Chemical Science," and "of Chemistry" respectively. In 1866 a student presented a thesis which I would like to see prepared at all Colleges of Pharmacy now in existence. The title of this Ph.G. thesis is "Our Alma Mater—Its Rise and Progress", and the author of this early history of the Philadelphia College of Pharmacy was Joseph P. Remington, later Dean of the same College and author of the well known pharmaceutical textbook carrying his name.

The Philadelphia undergraduate theses concerning historical topics deal with a variety of subjects. Pharmaceutical Ethics is a favored topic. There are theses dealing with "Duties of the Apothecary" in 1868, with "Duty of Pharmacutists" in 1878 and with "Duties of a Pharmacist" in 1881.



Patent medicines are dealt with for the first time in 1870 and again in 1871, 1873 and in 1875. In 1873 a thesis on "Biblical Record of Drugs and Kindred Subjects" appears. "The History of Medicine" is the title of a thesis of 1874 and "Medicine of Older Times" the title of another one written in 1875.

It is significant that it is comparatively late that "History of Pharmacy" is dealt with in a thesis presented at the Philadelphia College of Pharmacy. It was not until 1883 that a Ph. G. thesis was devoted to "The Growth of Pharmacy." The reason is simple. There was much historical literature concerning chemistry and medicine. There was little literature available as to the history of pharmacy.

In 1890 a thesis about "Art in Pharmacy" was presented and in 1897 another one on "Pharmacy Journals". With the beginning of the 20th century titles like "History of Vaccine", "History of Antitoxin" and "The Discoveries of Louis Pasteur" appear. Finally, in 1921, the hitherto comparatively small annual number of pharmaceutico-historical theses rises suddenly, including such interesting topics as "Historic Notes on sixteenth and seventeenth century Pharmacy" and "Clay Used in Pharmacy and Medicine from the Earliest Times." It is certainly not accidental that this sudden rise in numbers and value of the Philadelphia pharmaceutico-historical undergraduate theses coincides with the beginning of the Deanship in Pharmacy of the historically minded late Charles LaWall.

In principle it was undoubtedly the same with all the other Schools of Pharmacy within the United States. Here and there, and always quite accidentally, theses concerning the History or the Ethics of Pharmacy were presented. There was, however, no concerted endeavor unless some individual teacher was or became personally interested in this special field of research. Of such individual American teachers have to be mentioned besides LaWall primarily Frederick J. Wulling at the University of Minnesota and Edward Kremers at the University of Wisconsin.

It was long before LaWall that the late Dr. Kremers at the University of Wisconsin started to systematize in some way the historical research to be done by his students. Naturally, all these undergraduate theses have been restricted as

to scope as well as volume. They represented gleanings from easily available literature and not real research. But there have been computed bibliographies and quite a number of contributions to the history and pre-history of the U.S.P. which could be used with advantage by Dr. Kremers for his own historical work. Under the guidance of Dr. William O. Richtmann, bibliographies pertaining to the history of drugs have been compiled as undergraduate theses.

These Wisconsin undergraduate theses were followed by Master of Science theses based entirely or predominantly on pharmaceutico-historical research. As examples for the variety of the topics concerned may be mentioned the theses of A. H. Neumann on *Pulvis Effervescens Compositus* (1925), of P. A. Foote on Tablets (1928), of E. J. Ireland on The Ratio of Drug Stores to Population (1928) and the profound and comprehensive study on The Pharmaceutical Journals in the U. S. compiled by Minnie M. Meyer (1934).

In 1935 Dr. Kremers finally enjoyed the triumph to lead for the first time in the history of academic America a candidate to the Doctorate (Ph.D.) of a recognized University on the basis of an exclusively pharmaceutico-historical dissertation. The candidate was Sister Mary Francis Xavier. The thesis was devoted to The Statutes of the Guild of Physicians, Apothecaries and Merchants of Florence (1313-1316).

It is a student of Dr. Kremers, Dr. Charles O. Lee, who at Purdue University continues to do and to have done by his students research in the history of pharmacy.

As becomes evident from this survey, pharmaceutico-historical research has occupied only a very modest place within our past and present academic pharmaceutical endeavor.

As a matter of fact, pharmaceutico-historical research of greater importance, with the exception of histories of some pharmacy schools like the Philadelphia College of Pharmacy (J. W. England) and the New York College of Pharmacy (Curt Wimmer), has as yet been executed mostly outside of the Schools or Universities on American soil as well as abroad. Occasionally it was pharmaceutical associations which sponsored historical work, especially when an anniversary demanded an historical compilation of the dates and data concerned, or if some other immediate purpose could be served this way. One of the earliest pamphlets devoted to

pharmaceutical local history which we know of, the "Attempt at a History of the Profession of Pharmacy in the Free Imperial City of Nuremberg" was published in 1792 by the members of the *Collegium Pharmaceuticum Nurembergense* on the occasion of the 200th anniversary of the Medical Association of Nuremberg and presented to the latter.

In general, until about 20 years ago, the great bulk of valuable pharmaceutico-historical literature was published by individual pharmacists not connected with any school or University and mostly without official support. The only really remarkable exceptions are the augmented translation of the French physician A. Philippe's *Histoire des Apothicaires* into German by Hermann Ludwig, then Professor of Pharmacy at the University of Jena (1858) and the Historical Sketch of the Progress of Pharmacy in Great Britain written by Bell and Redwood (1880) the latter then occupying the chair of chemistry and pharmacy at the School of the Pharmaceutical Society of Great Britain. Neither the three great German pharmaceutical historians of the early twentieth century, H. Schelenz, J. Berendes and H. Peters, nor their French contemporary colleague, L. André-Pontier, ever occupied an academic chair. Finally the comprehensive pharmaceutico-historical research of the late physician Paul Dorveaux was done by him in his capacity as librarian of, not as a teacher at, the *Ecole Supérieure de Pharmacie* in Paris. The remarkable historical work of the late Fr. A. Flueckiger and Alexander Tschirch was devoted mainly to the history of pharmacognosy. It was not until 1927 that a professor at an American College of Pharmacy, the aforementioned Charles H. LeWall, published a comprehensive historical treatise, his *Four Thousand Years of Pharmacy*.

When in the twenties of our century chairs for the history of pharmacy were created in Austria and in Switzerland and the men occupying them, especially Haefliger (Basel), Winkler (Innsbruck) and Zekert (Vienna), published very valuable and comprehensive pharmaceutico-historical contributions, it should not be overlooked that these men were given the positions concerned because they had already made themselves known as historians of pharmacy, and that they probably would have done their research anyway. A more recent and rather comprehensive European publication which has been paid special attention because of its being the first at-

tempt at a sociological concept and performance of pharmaceutico-historical development, the Adlung-Urdang, *History of German Pharmacy* (1935), was written by men, who, although connected with the Institute of the History of Medicine and Natural Sciences at the University of Berlin in a voluntary capacity, did not belong to any faculty. On the other hand, of the two authors of the most recent American *History of Pharmacy* the one, Dr. Edward Kremers, was an academic teacher for almost fifty years, and it was after almost forty years of teaching that the author of the most recent English *History of Pharmacy*, James Grier, wrote his book.

The greatest impetus was given to pharmaceutico-historical research all over the world not by the Schools of Pharmacy but through voluntary association of historically minded pharmacists, in France through the *Société d'Histoire de la Pharmacie*, in Germany through the *Gesellschaft für Geschichte der Pharmazie*. The former has been publishing an excellent journal devoted exclusively to the history of pharmacy, the latter has initiated and published within the last decade about 40 treatises on pharmaceutico-historical subjects, some of them very comprehensive.

Being myself an author of several books and numerous pamphlets pertaining to the history of pharmacy, I may be allowed to make a few remarks as to the methods of pharmaceutico-historical research. As I said in the first sentence of this paper "historical research in pharmacy is nothing else but the employment of the general rules of research on the subject of the development of pharmacy." But is there really nothing specific as to the employment of the rules upon our special field?

It can be said quite generally that in historical research more than in any other one, a definite plan must be conceived before the beginning of the work. What sources may contain information besides the generally used and known? What may help sense finding after the fact finding job has been finished? One of the fundamental principles always to be kept in mind by everyone attempting research in the field of the history of pharmacy is the necessity of connecting and evaluating the specific details under a general environmental point of view. *History of Pharmacy* is a part of the general history of civilization reflected on Pharmacy. The develop-

ment in the use of drugs and in their preparation for medicinal purposes reflects the general development of mind and science. It has to be paralleled with the development in medicine and chemistry, *etc.*, and even with the philosophy determining the common way of thought in the times concerned. Besides, the political situation and the development of traffic and commerce, of world economy in general and the special economic conditions of the various districts or countries under consideration ask for attention. They do it especially as far as our research is concerned with the profession rather than with the sciences of pharmacy, if we deal with the legal regulations pertaining to the profession, its social standards and business conduct.

An example may illustrate these somewhat general statements. Before I wrote the Chapter "Economic Structure" in the Kremers-Urdang, *History of Pharmacy*, I first tried to become acquainted with the general economic development within the United States. What were the conditions of traffic and commerce in the North American Colonies? What reasons caused their development?

When the economic life of the nation in its early days on the whole was dependant on imports, then naturally, American pharmacy was dependant on imports too. On the other hand, the question had to be put and answered, whether there were some special circumstances in pharmacy making it an exception in the one way or the other. In fact there were such circumstances lying in the existence of indigenous drugs and creating a special situation in and for American pharmacy.

In all the other chapters too, whether they deal with education and legislation, with the growth of associations, the establishment of a literature, or the young republic and pioneer expansion, the same method is employed. In all cases the special development within pharmacy is paralleled with the general trends. It is this method which I have in mind in talking of a sociological approach to the problems concerned.

Two other examples may show that this kind of approach is by no means restricted to the history of the profession of pharmacy but has to be applied likewise, with some modifications, in research devoted to pharmaceutico-historical



problems within the scientific sphere of pharmacy. In 1933 I published a history of the metals in the official German pharmacopoeias from 1546 up to the present. First I extracted and translated from the Latin of the originals all formulas which, in whatever combination or preparation, contained metals. Having this basic material at hand, which by the way was too comprehensive to be printed—it would have taken about 560 pages in octavo—I looked for the general frame into which to put it. The four centuries made subject to my investigation were preceded by hundreds of thousands of years of evolution. What was known of the medicinal use of metals and their preparations in these times? Thus my publication started with a survey about metals in medicinal use in antiquity. That offered simultaneously an opportunity to show what had been taken from antiquity into the pharmacopoeias of the sixteenth century as to the group of drugs concerned. The next question to be answered was that of the individuals connected with the introduction of metals or their preparations into therapy. Finally the results to be derived from the material mentioned before had to be arranged into three main groups:

1. A statistic and therapeutic part, showing the increase or/and decrease in the official medicinal use of metals or their preparations through the ages and devoting a special chapter to each individual metal.
2. A survey on the development of chemistry and nomenclature with respect to metals and their preparations, likewise devoting a special chapter to each individual metal.
3. A survey of the examination of the metals and preparations concerned.

It is understood that medical and chemical literature had to be consulted and to be paralleled with the results gained from the investigation of the pharmacopoeias. However, that did not or at least not sufficiently answer the question which place the special problem to be dealt with in my investigation was given within the general development of human cultural endeavor. Here I found much information just for the most significant period around 1700 in an encyclopedia, devoted as its title says "to all sciences, arts etc." of the early 18th century (Johann Heinrich Zedler, *Grosses vollständiges Universal-Lexikon aller Wissenschaften und Künste u.s.w. Halle und Leipzig 1732-1749*).

Recently I finished an investigation of the Mystery about the London Pharmacopoeia 1618. There are two issues published, the one on May 7th, 1618 and the other on December 7th of the same year, the latter becoming the official guide of English medicine and pharmacy until 1650 and the predecessor to all later English pharmaceutical standards. What had happened? What was the reason for the replacement of the first issue, the product of years of consideration, by another one in such a short time? Are the differences between the two issues so essential that the change has to be regarded as a change of principle or are they unimportant? For more than three centuries an obviously tendentious contemporary explanation, blaming the printer, has been quoted again and again in the literature concerned. It was doubted here and there, but the problem has never been made subject to a thorough investigation.

When I started the investigation, I naturally first secured my material by thoroughly comparing the two issues of the *Pharmacopoeia Londinensis* of 1618 and translating from the Latin original into English all those parts in or from which some general explanation or illumination could be expected. Since the objective of this comparison was to find out not only the differences as such but also and even primarily their character, it would not have served its purpose without being paralleled by an examination of the general trends to be observed in the one and the other issue and the tracing back of the origin of these trends. The following questions had to be ventilated:

1. What was the background of this pharmacopoeia, politically, scientifically and culturally?
2. Was there a preliminary phase in the preparation of the pharmacopoeia?
3. What people were responsible for the preparation of the one and/or the other issue?
4. What sources were used in the compilation of the one and the other issue?
5. Was there any information about the printer said to have caused the withdrawal of the first issue by his "surreptitious and premature" publication of the book?

Thus illuminating the problem from all possible points of



view, I think I was able to dig it out of the dusk in which it was hidden for centuries.

The lesson to be learned from these examples is that we cannot expect more answers than we ask questions, and that the results just in pharmaceutico-historical research will be the better and of the greater interest, the more we extend the scope of our questions.

As I pointed out before, pharmaceutico-historical research has occupied only a very modest place within our past and present academic endeavor. Is there some hope for a fundamental change in the near future? The European situation being entirely clouded and offering not much prospect for decades to come, we have to restrict ourselves to the situation within the United States. I am of the opinion that this situation is promising.

There is no doubt as to the fact that the interest in history quite generally has been growing during the last decade by leaps and bounds and has reached a remarkable height. That this tendency did not fail to express itself in pharmacy likewise, can be gathered from the amount of articles of a historical nature appearing in the pharmaceutical press. Moreover, the (tentative) fifth edition of the *Pharmaceutical Syllabus* has advanced "History, Literature, and Ethics of Pharmacy" from an "optional" to a "required" subject. Finally, the American Institute of the History of Pharmacy, founded in 1941 at Madison, Wis., has given to pharmacy the institution which it had been missing hitherto: a permanent center and clearing house for research, instruction and information in the history of pharmacy, emphasizing particularly the development of American pharmacy.

There will doubtless be better organized courses in the history of pharmacy, following a general program and given not only in the first or second year but in the first three years and perhaps even during the entire four years course of study. There will be more Bachelor theses on historical topics presenting an opportunity for the candidates to get acquainted with the methods of research concerned. An inspired and inspiring teacher like the late Dr. Kremers will induce some students to write pharmaceutico-historical master theses which as shown by the examples quoted above, often will cover a broader field.

The pharmaceutico-historical Doctor theses, however, the only ones warranting sufficiently deep and broad research, will remain rare. They presuppose teachers who are themselves authorities and researchers in the field of the history of pharmacy, and they can be written only by people who are seeking their Doctor's degree more or less for the sake of their scientific curiosity and not as the basis of one of the usual careers.

On the other hand, there are some positions in the field of science, journalism and industry where a Doctor's degree achieved on the basis of pharmaceutico-historical research may be of decisive advantage especially if taken in addition to work guaranteeing the chemical, botanical, pharmacognostical, pharmacological or specifically pharmaceutical knowledge of obvious and immediate market value.

I am very glad to report that the American Institute of the History of Pharmacy was able to lend efficient assistance in such a case. An historically interested teacher of pharmacy who worked on a pharmaceutico-historical subject in the History Department of his University worked for awhile at Madison using the material of the A.I.H.P. and the advice of its director in order to get the specifically pharmaceutical slant (and detail!) which naturally could not be given to him in a history department. The gentleman received his Ph. D. in 1944.

Another, somewhat different case in which the American Institute of the History of Pharmacy could be of assistance has happened quite recently. A young pharmacist, after having obtained his Ph. D. at a University School of Pharmacy, had entered Medical School. He chose a historical subject of interest to both professions, The Interrelationship of Pharmacy and Medicine, for his M.D. thesis and worked on it under the supervision of the Director of the A.I.H.P. He too was successful.

Genuine research in the history of pharmacy will always remain a work of love by individual members of the profession. It may well be expected, however, that a steadily growing number of these individuals will be teachers at our Schools of Pharmacy. To these teachers I want to say: there is an institution to assist you in your endeavor in every way and with all possible means: the American Institute of the History of Pharmacy. This Institute is yours. Join it and use it!

## The Interrelationship of Pharmacy and Medicine\*

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### *Preface*

During the war years, the accelerated rate of study gave to the senior medical student, allowed to stay at the medical school approximately only four months, little possibility of doing the most desirable type of advanced study, *i.e.*, original research. In lieu of this, it had become common custom to write a "case report" on a subject encountered on preceptorship. This did not appeal to this author.

He came to the conclusion that an historical paper might be more desirable. In the first and foremost place, every student should at least be exposed to the history of his profession. This is true especially if he intends to remain in the scientific field and/or does some teaching. In this special case such a paper would furthermore make it possible for this author to take advantage of his experience in the study of pharmacy, in which he has had previous training, and medicine, his present field of study, for the purpose of a comparative survey. The title thus, presented itself. Added impetus was given the resolve of this author by the fact that he has been a member of the American Institute of the History of Pharmacy since shortly after it was founded on this campus on January 22, 1941.

The realization of the decision to attempt an historical paper was made possible by the willingness and readiness of Dr. George Urdang, director of the American Institute of the History of Pharmacy, to supervise and assist in its preparation.

It was soon realized that a paper of this type is not an easy task for an historical tyro.

Most sincere thanks are due Dr. Urdang who gave the author a scope for the paper and also gave freely of his

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\* A Thesis submitted to the Faculty of the Medical School of the University of Wisconsin in partial fulfillment of the requirement for the degree of DOCTOR OF MEDICINE.

valuable and already overtaxed time to smooth out the work and to keep the material from wandering too far off the subject.

The purpose of the paper is two-fold:

1. That the author might have some contact with history; and
2. That it might be pointed out that medicine and pharmacy are closely related. Dr. Urdang frequently refers to them as "Siamese Twins who although separated bodily, can never part in their aims and have to flourish together if they do not want to perish together."

### *Introduction*

"Pharmacy has been defined as the art and science of recognizing, identifying, collecting, selecting, preparing, safeguarding, evaluating and dispensing all substances of whatever kind and combination used in preventive or in curative medicine."

This definition clearly fixes the relation of pharmacy to, and its place in, medicine. It is an auxiliary of the art and science of medicine, forming a major, if not even the main, part of the latter as long as medicine as well as pharmacy were still in a more or less primitive and empirical stage, and developing into a distinct branch of medicine when the development of the one and the other profession, and especially of their basic sciences, asked for specialization in the one field as well as in the other for the benefit of the task common to both professions: the maintenance and/or restoration of health.

The question is, when did the first signs of the separation of pharmacy and medicine appear, and how did the pendulum swing back and forth?

The Roman encyclopedist, Aulus Cornelius Celsus, who lived in Rome at the beginning of the Christian era, divides his treatise on medicine (*De Re Medica*) into three parts according to the various treatments used against disease: dietetic, pharmaceutical and surgical. Many historians including Grier<sup>2</sup> interpret this to mean that the practice of medicine was sharply divided between physicians, surgeons and pharmacologists, who were especially concerned with the use of drugs. Castiglioni<sup>3</sup> states that this subdivision is wrong and that for the most part general medicine was practiced. This

would indicate that pharmacy at this time was a part of medicine.

In antiquity there were no pharmacies, at least in the modern sense of the word, so there could naturally not be any pharmacists either. Medico-historical authors, however, often bestow this title liberally and arbitrarily upon a host of people. Allbutt<sup>4</sup> gives the designation to Theophrastus (370-285 B.C.), a botanist, who was so named by Aristotle, but whose real name was Tirtanus. Allbutt also makes pharmacists out of Crateuas, who was a physician to the Court of Mithridates VI, King of Pontus (132-63 B.C.) and wrote on *materia medica* and especially on poisons and antidotes;<sup>5</sup> and also Appolodorus and Scriboneus Largus (first century A.D.). He says, "Moreover, for Dioscorides (first century A.D.), as for many other pharmacists, every remedy seems to have been a panacea."<sup>5</sup> He calls all writers on *Materia Medica* in general, "pharmacists" and he finally states that "it is not easy amongst these pharmacists to say which was robber and which was robbed." This statement, putting men like Dioscorides and the ill reputed vendors of drugs on the same level is certainly misleading.

Another mistake often found in the literature is the assumption that Galen (131-201) owned and operated a pharmacy.<sup>6</sup> This mistake originates from a misinterpretation of the Greek word "apotheca". In Galen's time and until the middle ages the term "apotheca" designated quite generally any storeroom and Galen's "apotheca" was nothing but a storeroom containing a great part of his library as well as the drugs used by him for his experiments and in his practice. The first Greek physician who is reported to have settled in Rome (about 220 B.C.), Archagathus, is said to have operated a pharmacy. This mistake originated from a misinterpretation of the Latin term "taberna" used by Pliny (23-79) with reference to Archagathus.<sup>7</sup> "Taberna" could mean almost any kind of business consisting of a room with four walls and roof: workshop, stall or tavern. The "taberna" referred to by Pliny is interpreted by Michael Ginsburg as "an office in which to receive patients".<sup>8</sup>

In classical times the vendors of drugs and poisons had a sinister reputation and most of the Graeco-Roman physicians prepared the medicines they prescribed.<sup>2</sup> Galen, not trusting



the "*pigmentarii*" and *seplasiarii*"\* was an ardent advocate of the preparation and dispensing of drugs by the physician himself. Never-the-less, it was in the time of Graeco-Roman antiquity that the groundwork was laid for the specialization in the professions and arts which led to what we call European culture including pharmacy.<sup>7</sup>

According to Grier, the art of pharmacy emerged in the early days of the Roman Empire, but the true apothecary first appeared among the Arabians in 8 A.D. and it is with them (Arabs) that the real craft of the apothecary begins.<sup>9</sup>

Grier's account of the changing in antiquity of pharmacy from an integral part of medicine to an annex reads as follows, "It was in the early days of the Roman Empire under changed social conditions that pharmacy allied to medicine became a practical art. This was necessitated by the increased number of drugs used and the need for presenting them in suitable forms. The preparations described by such physicians as Celsus in his *De Re Medica* (30 A.D.) and Scribonius Largus in his *Compositiones* (45 A.D.) required practical appliances and it is then that we have the first real evidence of the use of the ordinary mortar for pharmaceutical purposes."<sup>9</sup> This statement of Grier explains the fact that the business of the "*pigmentarii*" extended and physicians had their drugs more frequently compounded by those vendors of drugs whom they thought reliable. There is, however, no evidence for prescriptions given by the physician to the patient and filled for the latter by the "*pigmentarii*." In all probability the drugs, even if prepared by somebody else but the physician, were dispensed to the patient by the latter.

Castiglioni states, "Pharmacy, one might say began its scientific existence with the Arabians because of their special inclination to chemical studies and the great abundance of valuable drugs in the Orient. The Arabians were aided in attaining a high degree of perfection in their pharmaceutical preparations by the traditional lore of Persia in the preparation of perfumes and coloring materials. It is among the Arabians that we find the first real pharmacies . . . From these Arabian and Persian pharmacies many drugs and medicines were imported into Western Europe."<sup>10</sup> As far as we know, it was in Bagdad, in the 8th century, that a pharm-

\* Latin terms designating vendors of drugs.



aceutical store as a part of a system of public welfare and with a responsibility of its own was established.

Pharmacy began to be a profession of its own on European soil at the end of the twelfth century as shown by the first public pharmacies established in Southern France and in Italy. We know of the "*Statuta sive leges municipales Arles*" regulations for physicians and apothecaries in Arles, a town in Southern France, which were proclaimed between 1162 and 1202. "These statutes called for a separation of the medical and the pharmaceutical professions, provided a pharmaceutical oath and forbade the management of pharmacies by physicians."<sup>11</sup> The early development of pharmacy is summarized as follows: "Thus, pharmacy, with its beginnings in the instinctive defense against disease by primitive peoples, developed under several diverse influences. As part of the work of the priests, at first, it later fell among the duties of physicians. It found its own form and expression in the culture of Greece and Rome and developed a kind of professionalism in Byzantium. Only under the influence of Arabian wisdom and control, however, did it take firm root in European soil, as an institution of public welfare to be respected, regulated, and further developed."<sup>11</sup>

The regulations, however, introducing the separation of pharmacy and medicine which became the pattern for the later development of professional European pharmacy were promulgated within the legislation of the German Emperor Frederick II (1194-1250) concerning the hygienic situation in his kingdom of the Two Sicilies. The part of this legislation concerning pharmacy is now agreed upon to have been issued in 1240.<sup>12</sup>

The Latin text of the edict concerned is published in Lindenberg, *Codex Legum Antiquarum*, Frankfurt, 1613 and reads in the translation into English by Walsh as follows:<sup>13</sup>

"Title 46: Every physician given a license to practice must take an oath that he shall faithfully fulfill all the requirements of the law, and in addition, whenever it comes to his knowledge that any apothecary has for sale drugs that are of less than normal strength, he shall report him to the court . . . He [the physician] must not enter into any business relations with the apothecary, nor must he take any of them under his protection nor incur any money obligations in their

regard. Nor must any licensed physician keep an apothecary's shop himself. Apothecaries must conduct their business with a certificate from a physician\* according to the regulations and upon their own credit and responsibility, and they shall not be permitted to sell their products without having taken an oath that all their drugs have been prepared in the prescribed form, without any fraud. The apothecary may derive the following profits from his sales: Such extracts\*\* and simples as he need not keep in stock for more than a year before they may be employed may be charged for at the rate of three tarrenes+ an ounce. Other medicines, however, which in consequence of the special conditions required for their preparation\*\*\* or for any other reason the apothecary has to have in stock for more than a year, he may charge for at the rate of six tarrenes an ounce. Stations for the preparation of medicines may not be located anywhere, but only in certain communities in the Kingdom, as we prescribe below.

Title 47: In every province of our Kingdom which is under our legal authority, we decree that two prudent and trustworthy men, whose names must be sent to our court, shall be appointed and bound by a formal oath, under whose inspection electuaries and syrups and other medicines be prepared according to law and only be sold after such inspection. In Salerno in particular, we decree that this inspectorship shall be limited to those who have taken their degree as Masters in Physic . . . We decree also that the growers of plants meant for medical purposes\*\*\*\* shall be bound by a solemn oath that they shall prepare medicines conscientiously, according to the rules of their art, and as far as it is humanly

\*Urdang states: "A better translation, more fitting the sense of the Latin text would be: with the approval of the physicians."<sup>14</sup>

\*\*Urdang<sup>14</sup> states: "The Latin word 'confectiones' cannot be translated with 'extracts'. It means all compounded preparations in contrast to simple drugs."

+ One tarrene equals about 30 cents.

\*\*\*Urdang<sup>14</sup> states: "'ex natura' means because of their special nature. There is no reason for an interpretation like that given in the above translation."

\*\*\*\*Urdang<sup>15</sup> states, "the above translation is very dubious. The Latin word 'conscientia' means simply preparers. Alfred Baeumer translates it with apothecary. That seems to be dubious too because the duties of the apothecaries, the 'confectionarii' are regulated before without, however, mentioning the penalties. There is a third and very probable possibility of interpretation. 'Confectionarius' is the learned apothecary without respect to the question whether he himself prepares medicines or not. 'Conscientia' is anybody who actually prepares something and 'conscientes medicinas' are therefore, all people who prepare medicines. Thus the term may be used to bring all kinds of preparers of medicines into the frame of the law whether apothecaries or not."

possible that they shall prepare them in the presence of the inspectors. Violations of this law shall be punished by the confiscation of their movable goods. If the inspectors, however, to whose fidelity to duty the keeping of these regulations is committed, should allow any fraud in the matters that are entrusted to them, they shall be condemned to punishment by death."

Although restricted to the territory of the dual kingdom of the Two Sicilies, the kingship of which Frederick held as an inheritance from his Norman-Italian mother, the idea behind this edict, that is, the separation of pharmacy from medicine, spread quickly over the whole of Europe.

Three of the regulations of the edict created pharmacy as an independent branch of public welfare service and were gradually adopted in the centuries that followed. Two additional regulations were influential in the development of public pharmacy in most of the states coming into the sphere of German culture, but they were not practiced by the Aglo-Saxon world.

The three essential regulation are: the separation of the pharmaceutical from the medical profession; the official supervision of pharmaceutical practice and the compulsory use of a prescribed formulary according to which medicaments must be prepared.

The first regulation was transgressed by both parties, but it did recognize pharmacy as an independent profession. By forbidding any business relation between physician and pharmacist, it tried to establish sincere, good service to the sick by these professions and to prevent exploitation.

The supervision of pharmacy recognized it as a public health service for the protection of the public.

The formulary that was followed in the kingdom of the Two Sicilies was probably the "*Antidotarium Salernitarum Nicolai*".

Sudhoff states: "Materia medica, prescription writing, pharmacy of antique, and oriental provenance, as well as Arabian apothecaries' lore, found their way into the West through Salerno. The Book of Simples of Platearius and the *Antidotarium* of Nicholas were the leading Salernitan texts

in this field."<sup>16</sup> Also he stated that Frederick II made Salerno the official medical teaching and examining center for his whole South-Italian Kingdom.

#### *Formularies and Pharmacopoeias*

In the middle of the 15th century there appeared a book, the "*Compendium aromatariorum*", written by a widely known practitioner, one Saladin de Asculo, physician to the Prince of Tarentum, which has been regarded as the first textbook on pharmacy for pharmacists. According to Castiglioni<sup>17</sup>, Saladin was driven to write this "by the misdeeds of pharmacists whose ignorance and lack of skill often brought scorn and infamy on the famous doctors." In spite of this, the author expressly states that he wrote the book on the initiative of "most of the pharmacists" and especially following the request of a very experienced man whom he reverently calls a master in the art, and he even dedicates the book to this pharmacist. Unfortunately, he does not tell the name, giving merely the initial "T" and referring to him as the Court pharmacist of the Prince of Tarent. This text treats not only of the kind of examination to which pharmacists should be submitted, but also of all the medicaments described in the formularies then mostly used, especially the Salerno "*Antidotarium Nicolai*" and the "*Grabadin*" or "*Antidotarium*" of the apocryphal "Mesue Junior" \*. Also included are discussions of weights and measures, of ways of preparing remedies, of plants, flowers, roots, and ways of preserving simples and compounds, as well as details concerning the organization and conduct of a pharmacy . . . As books to be kept in the stores of the apothecaries Saladin recommended not only the Arabian influenced "*Antidotaria*" Nicolai and Mesue, but also the "*Canon*" or "*Qanun*" of the Persian-Arabian physician Avicenna (980-1037); the Arabian-Spaniard Serapion Junior's (11th or 13th century) "*Liber de Medicamentibus Simplicium*" the Italian Simon Januensis' "*Synonyma Medicinæ*" (about 1300); the "*Liber Servitoris*" attributed to the Arab Albucasis (about 1000); and, as of secondary importance, the then already 1300 years old "*De Materia Medica*" of the Greek Dioscorides (1st century); the so-called "*Macer Floridus*", a Latin poem on herbs probably written by the French Abbot

\* An assumed name adopted by an unknown, probably Italian, author in the 13th century from the Mesue Senior who wrote in the latter part of the 8th and early part of the 9th centuries. Castiglioni<sup>18</sup> states: ". . . we note among the pharmacists Mesue The Younger, about whose personality there has been much discussion;"

Odo de Meune towards the end of the 11th century, and the "*Circa Instans*" a book on simple drugs written by the Salernitan physician Matthaeus Platearius in the middle of the 12th century.

It proves the enormous influence exerted on the European pharmaceutical world by this first book devoted exclusively to the instruction of the pharmaceutical tyro and setting rules for the conduct of a pharmacy, that according to Haefliger<sup>19</sup> the Basel apothecaries at the end of the 15th century were legally advised to keep in their stores not only all the books listed by Saladin de Asculo but Saladin's own book likewise.

The work of Mesue Junior is worthy of note. Although his name was fictitious, his work was of the greatest reality and effect. This refers to his "*Grabadin*" or "*Antidotarium*" which was for centuries the authority on the composition of medicaments. The book was not only in use in practically every European pharmacy, but also became the basis of the later official pharmacopoeias.<sup>20</sup>

Most of the formularies written up to the 16th and even 17th centuries represented to a rather great extent commentaries on the "*Grabadin*" of the assumed Mesue Junior and the medical books of real Arabian-Persian origin, besides naturally, Dioscorides. Among these commentaries, which were used as texts as well as for compounding of drugs, the "*Lumen Majus*" or the greater light written by Joannes Jac Manlius de Bosco of Alessandria near Pavia<sup>21</sup> is of special interest within the frame of this topic because it represents the first treatise on drugs we know of as written by a pharmacist.

A case like this was, however, still and for quite a long time an exception rather than a rule. What became more and more frequent were formularies written by physicians on the request of and/or aided by pharmacists. Thus we know that the first official European pharmacopoeia, "i.e. the first pharmaceutical standard adapted to the needs of a certain political unit and made obligatory for the physicians and pharmacists of this unit by the authorities concerned", the Florentine Pharmacopoeia of 1498, was brought out "at the request of the executive officers of the guild of the apothecaries."<sup>22</sup>

That pharmacists played a vital role in the famous *Pharmacopoeia Londinensis* of 1618 is found in Urdang's English



translation of the Latin Preface: "We have solicited some of the most experienced pharmacists themselves to join our conference in this matter, and it is on the strength of their experience and their elaboration of a definite mode of preparation that we have adopted uniform measures and have determined upon a certain dose which the pharmacists shall neither increase or decrease."<sup>23</sup>

The various formularies and pharmacopoeias up to this time, i.e., the early seventeenth century, did not differ to any marked degree. The only variations were the number of ingredients and the insertion of formulae which suited the fancy of the particular author. The important change in character of these books of standards came with the introduction of chemicals for internal use and of chemical processes as a means of preparing remedial agents.

It was toward the end of the eighteenth century that Lavoisier, not an apothecary himself, but a pupil of the apothecary, G. F. Roulle (1703-1770), published his famous experiments concerning the rôle played by oxygen in the process of combustion and thereby established the basis for the "new chemistry". The classical experimental researches of Lavoisier and their correct interpretation were preceded by the findings of phlogistonists\* of whom two were apothecaries. In 1774 the French apothecary Bayen (1725-1798) reported on "*un fluide elastique*" escaping when mercuric oxide was heated. The credit for the independent discovery of this substance is commonly given to Joseph Priestly (1735-1804), an English clergyman, who called it "life air" and to the German-Swedish apothecary, Carl Wilhelm Scheele, who designated it "fire air". We now know that Scheele's discovery preceded that of Priestly for about one year.<sup>25</sup>

It was in consequence of the new theory of Lavoisier that the authorship of most pharmacopoeias took a decided change. The first Prussian Pharmacopoeia, the "*Pharmacopoea Borussiae*" published in 1799, for instance, originated decidedly under the influence of pharmacists who simultaneously hap-

\* Phlogiston (Greek-phlogizein—set on fire). Theory, suggested by the German physician Johann Joachim Becher (1635-1682) and elaborated by Georg Ernst Stahl (1660-1734). "Before Lavoisier, the view prevailed that when a substance is burned, a subtle principle flies out of it. This notion dates back to antiquity,"<sup>24</sup> probably suggested by the rising of the smoke of ordinary fires. This subtle substance, which Stahl thought flies out of bodies on burning, was called by him "phlogiston". When mercury is heated in air, the red powder (HgO) which results according to this theory would be called "dephlogisticated mercury".



pened to be among the best chemists of the time. It was not only one of the first official pharmaceutical formularies based on the new chemical theories and the terminology of Lavoisier, but it was also the first one in Germany primarily prepared and influenced by pharmacists and not by physicians. According to Urdang<sup>26</sup>, "The explanation is to be sought in the fact that in Germany the development of chemistry has been fostered by apothecaries since the middle of the eighteenth century. Their opportunity had come and it had found them ready. They could not be overlooked and ignored. It was the triumvirate, M. H. Klaproth\*, S. F. Hermstaedt,\*\* and Valentine Rose Junior†, who assisted by other pharmacists, and, naturally in collaboration with physicians elaborated the pharmacopoeia."

In Spain the first pharmacopoeia to be made official for the whole of the country, the "Pharmacopoea Hispana" published 1794, was likewise compiled with the active participation of scientifically minded pharmacists and proved this fact by the use of the new chemical nomenclature.<sup>29</sup> Thus, the modern continental European pharmacopoeias developed according to the scientific ability and the organization of the pharmacists.

In England, the cooperation of pharmacists in the preparation of the official pharmacopoeias until the end of the 18th century as apparently only sporadic and very restricted. Barrett<sup>30</sup> reports on an invitation extended in 1785 by the Royal College of Physicians of London to the London Society of Apothecaries to assist the physicians in revising the "London Pharmacopoeia" in order that it "should be as correct and free from errors as possible, and that all the formulae should be such as can be easily prepared by the gentlemen of your society." Another invitation followed in 1806.<sup>31</sup>

During this time a very peculiar development took place in England. The members of the Society of Apothecaries then

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\* Klaproth, M. H. (1743-1817)<sup>27</sup>, German pharmacist and the first professor of Chemistry at the University of Berlin, was considered the father of modern analytical chemistry. He was the first to recognize with certainty the elementary character of uranium, titanium, zirconium, strontium and cerium. He found fluorine in bones, potassium in feldspar. Most of his discoveries were made in his own pharmacy.

\*\* Hermstaedt, Sigismund (1760-1833)<sup>28</sup> German apothecary and successor to Klaproth as professor of chemistry at the University of Berlin, a pioneer in phytochemistry and simultaneously an important chemical engineer.

† Rose, V. Junior, (1762-1807), prepared for the first time sodium bicarbonate by saturating a solution of sodium carbonate with carbon dioxide.

became primarily medical practitioners. Their interest, education and examinations were directed toward the practice of medicine rather than of pharmacy, and they could no longer be considered representatives of pharmaceutical practice although they continued for quite a while to keep open stores. The people gradually succeeding the "Gentlemen of the Society of Apothecaries" in the practice of pharmacy, calling themselves chemists and/or druggists were at that time unorganized and could not be expected to offer regular and expert cooperation in the pharmaceutical literature of this period.

Nevertheless, it was the criticism of a learned pharmacist, Richard Philips, that forced the medical authors of the "London Pharmacopoeia" in the early 19th century to admit that the time had come in which pharmaceutico-chemical knowledge had become indispensable for the preparation of a pharmacopoeia. The editions of 1836 and 1857 were prepared with the very essential and comprehensive assistance of the pharmacist Philips. Now the "British Pharmacopoeia" is edited by the General Council of Medical Education and Registration. With it the Pharmaceutical Society, since 1841 the organization of English Pharmacy, continues to cooperate, although dominance is retained by the medical profession.

In France the cooperation of pharmacy and medicine in the preparation of their official book of standards is evident from the title page of the second edition of the national "Codex", issued in 1837, which reads as follows;

*"Codex Pharmacopée Française par ordre du Gouvernement par une commission composée de MM. Les Professeurs de la Faculté de Médecine, et de l'école spéciale de Pharmacie de Paris."*

The history of the Pharmacopoeia of the United States of America offers likewise convincing evidence of the need for the cooperation of medicine and pharmacy. The precursors of the U. S. P. were written by physicians; the first U. S. P. conventions consisted entirely of physicians; later there was cooperation in the preparation of the book with physicians as the main contributors; then there came cooperation with pharmacists as main contributors; and finally we have cooperation of organized medicine and organized pharmacy on a basis of adequate division of labor and responsibility.

The first precursor was the "*Pharmacopoeia Simpliorum et Efficaciorum* or the Lititz Pharmacopoeia". It was published in Lititz, Pa. in 1778, and was used in the military hospitals of Lititz and Bethlehem. This was really an emergency military hospital formulary and the author was in all probability Dr. William Brown<sup>22</sup>, an American graduate of the University of Edinburgh.

The fact that a second edition was published in 1781 is evidence that it had practical usefulness.

In 1787 John Morgan proposed to the College of Physicians of Philadelphia the compilation and publication of a pharmacopoeia for Pennsylvania. Since the Federal Constitution had not yet been ratified by all the 13 states, a general standard was apparently not considered. One year later the U. S. A. became a reality and the plan of the College of Physicians of Philadelphia was expanded.

At a meeting of the college, 1788, the following physicians John Redman, John Jones, Adam Kuhn, William Shippen, Jr., Benjamin Rush, Samuel Pl. Griffiths, Caspar Wistar and James Hutchinson were appointed a committee to form a pharmacopoeia for the use of the college. They seemed to abandon the idea of preparing a work for local use.

1789, 100 copies of a circular were sent out. These stated the need for a pharmacopoeia and asked the addressees for information on what native American remedies were discovered amongst them. They received only two replies, but the subject was not abandoned.

Dr. Benjamin S. Barton was appointed to the committee in 1791; Dr. Thomas Parke was added in 1794 and in 1797 Griffiths, Barton, and James were appointed to prepare and submit to the college a statement of all medical substances and pharmaceutical processes which seemed proper to be included in the intended pharmacopoeia. No evidence of the statement being made can be found.

In 1798 the medical society of South Carolina published a letter suggesting "the establishment of an independent American Materia Medica". This was probably instigated by the physician and wholesale druggist Dr. Johnson, a graduate of the Philadelphia Medical School. Thus, it has been considered a continuation of the Philadelphia effort.

The plans of the physicians in Philadelphia and South Carolina were fully realized by their Massachusetts colleagues. The Massachusetts Medical Society in 1786 petitioned the legislature to prevent the sale of bad or adulterated drugs. The pharmacopoeia was considered primarily a step in the same direction. At a meeting of Counsellors, 1805, a committee was appointed to draw up and lay before the society a pharmacopoeia or formulary, for the preparation of compound medicines with names affixed to the same, to be called the Massachusetts Pharmacopoeia.

At the meeting in 1806 the committee, Drs. James Jackson and John C. Warren, reported the progress. They advertised in the public press requesting physicians to furnish such formulae as they might judge useful. In 1807, the committee presented their manuscript and it was approved. The book, 272 pages, listing 536 drugs and preparations appeared early in 1808, published at Boston, Mass. It was the next precursor of the U. S. P. and was modeled after the Edinburgh Pharmacopoeia.

The authors were ahead of their time. As pointed out by Urdang,<sup>33</sup> they stated that the text was written in English and not in Latin as the model because Latin was not adopted in this country, where the apothecaries are not necessarily instructed in that language. This also held for most of the American physicians of those days.

The apothecaries are mentioned several times in the preface. "It is the business of the physician to prescribe and of the apothecary to prepare medicines."<sup>34</sup> This was an unreserved recognition of the separation of medicine and pharmacy and at 1808 was advanced in time. It was the first known official declaration of this kind in the United States to be made not by an individual physician like John Morgan but by an organized group of medical practitioners.

Also in the preface we read: "In them [larger cities], the professions of physician and apothecary are most distinct; and between those, whose relation to each other is so important, a perfect understanding should exist. As this cannot be established between them as individuals, it is necessary that there should be uniformity, both in the pharmaceutical preparations and language."

In 1816, the last of the formularies commonly regarded as precursors of the U. S. P. appeared, the "*Pharmacopoeia Nosocomii Neo-Eboracensis*" or the "New York Hospital Formulary". It bears this designation rightly only so far as the time of its appearance is concerned, not as to its contents or even as to the ambitions of its authors. It was an early American representative of the innumerable printed or unprinted hospital formularies which, designated for local use and instruction, have always been written and still continue to be written.

Of the two men responsible for the New York Hospital Formulary, Samuel L. Mitchell and Valentine Seaman, the first one, Mitchell, played an important part in the movement which only a few years later led to the issuance of the first pharmacopoeia of the United States.

In recent years, there has been some discussion as to whether Lyman Spalding or Samuel Mitchill is to be regarded as the "Father of the Pharmacopoeia". Mitchill encouraged Spalding in the plan of initiating a "United States Pharmacopoeia" to be prepared as a cooperative task by the medical associations of the entire country and to be published as their common product. He sanctioned this plan and assisted in executing it but left both responsibility and glory to Spalding.

The new book appeared in Boston on December 15, 1820, bearing the title: "The Pharmacopoeia of the United States of America, 1820. By the Authority of the Medical Societies and Colleges." At this time there was no organization of pharmacists so they did not contribute to this edition. However, in contrast to the Massachusetts Pharmacopoeia which doubted the Latin of the pharmacists, this book stated that "no well educated physician or apothecary is unacquainted with this classical language." The question was wisely left open how many of such "well educated" men could be found in American medicine and pharmacy of this time.

This pharmacopoeia was one year old when the Philadelphia College of Pharmacy was founded and opened its school. England<sup>35</sup> states: "As soon as it appeared, the Philadelphia college of Pharmacy was ready with wholesome criticism. A committee pointed out errors which had crept into the book. They properly held that in the revisions which were contemplated the professions medicine and pharmacy should each



have a hand in a work in which they were equally interested."

The Philadelphia College of Pharmacy prepared a revised text which was used as a basis for the Philadelphia edition of the 1831 U. S. P. which soon supplanted the competitive New York edition of 1830.

A very definite and decisive contact and collaboration of pharmacy and medicine was established by the fact that the men who became the most influential in the preparation of the U. S. P. issued in Philadelphia in 1831, the physicians George B. Wood and Franklin Bache were simultaneously lecturers in the Philadelphia College of Pharmacy, the first since 1822; the second since 1831. There had been a kind of a schism between a group of medical societies dominated by New York and another by Philadelphia. Hence there were two second editions of the United States Pharmacopoeia. In New York it was exclusively the work of medicine; in Philadelphia pharmacists helped. It was the Philadelphia issue and way of work which has been continued by the subsequent editions of the U. S. P.

In several places the preface of the Philadelphia Pharmacopoeia of 1831 gives evidence of the cooperation of pharmacists and of the appreciation of the work done by them. For example, it states, "alterations were the necessary consequence of improvements to which the industry and zeal of pharmacists as well in this country as in Europe have given rise."<sup>36</sup> Also: "Every accessible pharmacist authority has been consulted and practical investigations have frequently been resorted to." Further: "The whole has passed the examination of pharmacists of acknowledged eminence in their profession."<sup>37</sup>

In the next revision (second) or the third edition of the U. S. P. not only the Philadelphia College of Pharmacy but the two other pharmaceutical organizations existing at that time also were invited to help. That the advice of these pharmacists was appreciated becomes evident from the fact that the book was delayed until 1842 rather than not give full consideration to contributions made by the pharmaceutical collaborators. Although contributions came from the colleges of pharmacy of Massachusetts (Boston), New York and Philadelphia, this time too "... the most important aid was



afforded by the college of pharmacy of the latter place, from which an amendment of the whole pharmacopoeia by a special committee was obtained."<sup>38</sup>

It has been pointed out that American Pharmacy played an important part in the preparation of the U. S. P. of 1831 and 1842. Pharmacy was, however, not given a fixed place within the groups responsible for the revision of the Pharmacopoeia until 1851. It was the beginning of a new period when pharmacy was accorded official representation in the General Convention at Washington leading to the U. S. P. of 1851.

In spite of the fact that the colleges of pharmacy were given a place among the medical groups named as responsible for the preparation of the U. S. P. of 1851, the book, like its predecessors since 1831, was published "by Authority of the National Medical Convention". It was in 1864 that the word "Medical" was dropped and the note on the title page changed to read "by Authority of the National Convention for Revising the Pharmacopoeia". This was done on the suggestion of John Meakin of New York, a pharmaceutical member of the convention. This reference was changed again in 1905 and since that time reads, "by Authority of the United States Pharmacopoeial Convention."

The convention of 1860 which led to the U. S. P. of 1863 (5th Edition; 4th Revision) appointed a committee of revision consisting of four pharmacists and four physicians; also the American Pharmaceutical Association, founded in 1852, was represented for the first time.

At the convention of 1870 there were 24 medical colleges and 8 colleges of pharmacy represented. Of the six contributions submitted to the convention, four came from pharmacy, indicating that pharmaceutical interest was increasing and medical interest decreasing.

With the advent of National Organizations in medicine (1847) and pharmacy (1852) it was but natural that attempts were made to make the task of revision a concern of the national organizations rather than to continue the system of leaving it to loosely bound conventions of local groups. Dr. E. R. Squibb, a physician and leading pharmaceutical manufacturer, with early experience as a druggist, suggested in 1876 that the American Medical Association should take over

the responsibility for the future editions of the U. S. P. securing simultaneously the cooperation of the American Pharmaceutical Association, the latter working in this case as a special branch of medicine and assisting the medical profession in revising the standard which was of equal interest to both professions.

At the 1876 Philadelphia American Pharmaceutical Association meeting this plan was presented for discussion and the representatives of pharmacy voiced the opinion that, "The medical profession certainly has the right to direct what substances shall enter into the Pharmacopoeia, their general character, and the preparation, but the details of the work devolve certainly upon pharmacists and pharmaceutical chemists."<sup>39</sup>

One year later, in 1877, Dr. Squibb submitted his plan in detail to the Chicago American Medical Association meeting. He encountered an appalling lack of interest resulting in a rejection of his suggestions which were apparently not even given serious consideration.

This rejection created an opportunity for American Pharmacy which fortunately was not overlooked. The members of the American Pharmaceutical Association saw it and went to work. They appointed a committee to make a draft not only of a new edition but of a new kind of United States Pharmacopoeia. This was done and the United States Pharmacopoeia of 1882, taking advantage of the most recent progress in pharmaceutical chemistry, became the basis for all later editions.

The members of the American Pharmaceutical Association displayed a good deal of diplomacy in taking control of the pharmacopoeial revision. They maintained the habitual "convention", elected a physician, Robert Amory, as president, just as had been the case since 1820, and further secured medical cooperation. That the turn in the administration of the United States Pharmacopoeial revision work had brought new life into an atmosphere of stagnation becomes evident from the fact that, while only sixty delegates were present at the convention of 1870, the number of those in attendance grew from now on steadily being seventy-five in 1880 and 175 in 1890. Internally, the works were changed. The committee of revision became the official executive supported by the

American Pharmaceutical Association as the representative of the American pharmaceutical profession as a whole. This committee alone was to report the complete plan for the revision of the pharmacopoeia instead of having the convention revising and combining the drafts and contributions presented by various associations or individuals.

Twenty-five members made up this committee of revision and fourteen were pharmacists, holding all positions of responsibility.

The convention of 1890 again was presided over by a physician, Horatio C. Wood. This time the committee of revision consisted of eight physicians and seventeen pharmacists although more than one-half of the delegates were physicians. The numerical strength of pharmacy in the committee of revision of the modern United States Pharmacopoeia finds its reason in the abundance of pharmaceutical technical work involved in the revision of the pharmacopoeia. On the other hand, the sole right of medicine to determine the scope of the pharmacopoeia has always been recognized and the cooperation of the physicians was eagerly sought by the American Pharmaceutical Association. As one of the revision committee, the pharmacist, C. L. Diehl, stated in 1890, "The acceptance of the pharmacopoeia as an authority, and confidence in its preparations depend in so large a measure upon the cooperation of the two professions, that every encouragement should be offered to physicians to participate in the work of revision."<sup>40</sup> Diehl also points out that the task of the physicians consists primarily of the decision "upon the admission or exclusion of articles."<sup>40</sup>

At the convention of 1900 the physician H. D. Wood was reelected president. The Committee of Revision elected in 1900 consisted of 18 pharmacists and 7 physicians. This time the delegates were one-half pharmacists and one-half physicians. It was in the same year that the American Pharmaceutical Association realized its goal of giving the pharmacopoeia a solid and lasting foundation. "On July 7, 1900, a charter with articles of incorporation was issued by the District of Columbia to the United States Pharmacopoeial Convention with a view of giving greater stability to the organization."<sup>41</sup> The five members of the first Board of Trustees of this new corporation were representatives of pharmaceuti-

cal colleges or associations, among them the three official delegates of the American Pharmaceutical Association.

The pharmacopoeia resulting from the convention of 1900 appeared in 1905. The Pure Food and Drug Act of 1906 granted it full legal recognition. This made the United States Pharmacopoeia indispensable for the entire American drug trade within or without the pharmacies.

A physician, Harvey W. Wiley, was elected president of the 1910 convention. Of the delegates, there were five pharmacists to every four physicians. Of the officers, six represented medicine and three pharmacy. Of the Board of Trustees, two were physicians and three pharmacists, brought to a total of seven by the ex officio membership of the medical President of the convention and the pharmaceutical Chairman of the Committee of Revision.

There were three sub-committees on medical subjects consisting of physicians: 1. Scope: therapeutics, pharmacodynamics and posology; 2. Biological products and 3. Diagnostic tests. There were twelve sub-committees concerned exclusively with pharmaceutical, botanical, pharmacognostical and chemical problems and consisting of pharmacists who were specialists in their field.

Dr. Reid Hunt, a physician, was elected president of the 1920 convention. A fourth medical sub-committee concerned with biological assays was established and a "Referee Committee on Scope" consisting of the twenty-one physicians on the General Committee, was given the final responsibility for deciding disputed questions involving the admission of substances of therapeutic value.

The convention of 1930 elected Dr. Walter A. Bastedo, a physician and former pharmacist, as president. It was at this convention that the broadening of the scientific bases of drug therapy was officially recognized by a revision of the Constitution and the By-Laws of the United States Pharmacopoeial Convention. "The changes adopted in 1930 widely enlarged the circle of those entitled to membership, and steadily increased the growing number of individual supporters of the revisional work."<sup>42</sup> It is understood that in spite of this extensive inclusion of non-medical and non-pharmaceutical experts the direction of the work has remained in the hands of organized American medicine and pharmacy with a phy-

sician as President and a pharmacist as Chairman of the Committee of Revision.

The United States Pharmacopoeia has become the "legally recognized standard of a number of sciences and industries, guaranteeing honesty and security in the trade in drugs, supporting as well as supported by research work in the most widely different fields. At the present time the United States Pharmacopoeia is generally recognized to be one of the best and most progressive books of its kind."<sup>43</sup>

The 1940 United States Pharmacopoeial convention elected as president, the physician, Charles W. Edmunds, who died in 1941, and was succeeded in his office by the physician Gary Eggleston.

It was at this convention that the American Medical Association represented by its secretary, the physician, Morris Fishbein, took a very active part in the proceedings. In a paper on "The Relation of the Pharmacopoeia to the Medical Profession", Dr. Fishbein said the following: "With the progressive evolution of scientific pharmacy, and especially with the introduction of more scientific standards and tests, the major share of the technical work of the revision fell on the pharmaceutical members. In the convention of 1930 the relative membership of medicine and pharmacy on the committee actually in charge of revision was fixed at one to two."<sup>44</sup>

#### *Pharmacists—Physicians*

It is a well known fact that pharmacists have for centuries shown a desire to take their M. D. degree, thereby seeking further education along subjects with which they had previously become acquainted in their pharmacy training. Except for a period in England, it was in general, individual pharmacists remaining in pharmacy, and not a whole group of practitioners who turned to medicine.

As early as the seventeenth and eighteenth centuries there were numerous examples of pharmacists acquiring the knowledge and the title of an M. D., such as: the French Moise Charas, (1618-1698) who wrote "*Pharmacopée Royale Galénique et Chymique*" and several other treatises including one on the preparation and employment of China bark, and his colleague and compatriot, Nicolas Lemery (1645-1715), author of the first "*Pharmacopée Universelle*" and regarded



the founder of modern phytochemistry; the German Sigismund Hermbstaedt (1760-1833) likewise a pioneer in phytochemistry and simultaneously an important chemical engineer. Hermbstaedt's compatriot, F. A. C. Gren (1760-1798) who, in 1788, discovered cholesterine in gallstones may be mentioned at this place, although he left pharmacy for teaching general science comparatively early, because of his book on Fundamentals of Pharmacology ("*Grundriss der Pharmakologie*") in which his double capacity as a pharmacist and a physician proved its value.

In England the whole group of "apothecaries" became first second grade medics and finally merged with official medicine. The Society of Apothecaries of London was created in 1609 on a charter of the first Stuart King of England, James I. This united the apothecaries with the grocers. In 1617 the apothecaries were granted a new charter which formed them under the name of Masters, Wardens, and Society of the Art and Mystery of the Apothecaries of the City of London, into an organization entirely on their own. This charter gave them the monopoly of keeping an apothecary shop and made it unlawful for the grocers or any person to prepare, compound, or dispense medicaments.

The grocers protested but were held back by the king who replied: "I myself did devise that corporation [the Apothecaries] and do allow it. The Grocers who complain of it are but Traders. The mystery of these apothecaries was belonging to the apothecaries wherein the Grocers are unskilful, and therefore I think it fitting they should be a Corporation to themselves . . . ."45 The apothecaries had a fight on their hands, both with the physicians who objected to their practicing in minor ailments and with the chemists and druggists who flourished in spite of the efforts of the apothecaries to hold them back.

There is no doubt, the apothecaries practicing medicine trespassed on territory not belonging to them. They had gained a large number of clients who depended on them and also they had proved themselves useful. Thompson writes, "At the time of the Great Plague (1665-66) when the majority of the physicians in London died, and their survivors had fled from the scourge, the friends of the sick were obliged to call in the aid of the apothecaries, who readily forsook their shops to visit the sufferers at their bedsides."<sup>46</sup> It was after this



period that the right of the apothecary to visit patients at their houses became recognized and established. This increased the din of the quarrel between the two groups. Very bitter feelings sprang up among the physicians, especially the younger group, with whom patients were scarce. These physicians proposed to open dispensaries as a means of retaliation against the apothecaries.

The first dispensary (opened in February 1697) and the others which followed met with success and inflicted harm on the apothecaries who then subjected the physicians to the same criticism which they (the physicians) had leveled at them (the apothecaries), of trespassing on foreign territory for gain and not for charity.

"So the wordy warfare went on, until a difference of opinion began to be manifested in the college itself as regards its policy, and while some of its members supported the dispensary, others now expressed their disapproval of it. This dissension delighted the apothecaries, who agreed among themselves not to recommend the "Dispensarians" or to call them into consultation."<sup>47</sup>

Finally, an apothecary named Rose was accused of prescribing as well as compounding medicines and the court decided in favor of the college of physicians. The House of Lords, however, on the 15th of March, 1703, ordered, "That the judgment given in the Court of Queen's Bench be reversed."<sup>48</sup> The struggle came to an end and from this time on the apothecaries were recognized as medico-pharmaceutical practitioners.

The battle on the second front, *i. e.* against the chemists and druggists was not so favorable for the apothecaries. The former became organized and "the more the apothecaries became medical practitioners the more, naturally, their original tasks passed into other hands."<sup>49</sup>

Percival in his *Medical Ethics* points out what he thought should be the conduct of the physician toward the apothecary;

"In the present state of physic, in this country, where the profession is properly divided into three distinct branches\*, a connection peculiarly intimate subsists between the physicians and the apothecary; and various obligations necessarily

\* Physicians practicing internal medicine only, surgeons, and apothecaries.

result from it. On the knowledge, skill, and fidelity of the apothecary depend, in a very considerable degree, the reputation, the success, and usefulness of the physician. As these qualities therefore justly claim his attention and encouragement, the possessor of them merits his respect and patronage."<sup>50</sup>

He points out that the apothecary is a precursor of the physician and suggests cooperation: "It is in general, therefore, expedient, and when health or life are at stake, expediency becomes a moral duty, to confer with the apothecary, before any decisive plan of treatment is adopted; . . . for if the apothecary be a man of honour, judgment, and propriety of behaviour, he will be a most valuable auxiliary through the whole course of the disorder, by his attention to varying symptoms; by the enforcement of medical directions; by obviating misapprehensions in the patient, or his family; by strengthening the authority of the physician; and by being at all times an easy and friendly medium of communication;"<sup>51</sup> He further suggests that the physician occasionally make his visits with the apothecary.

This type of apothecary flourished during the later period of the 18th century and is referred to as "the physician of the poor in all cases, and of the rich when the distress or danger is very great."<sup>52</sup> It is in line with this statement when Percival in his Code says that it is within the province of the apothecary to be called for . . . "the slighter indispositions to which all families are incident . . ."<sup>53</sup>

In 1841 the chemists and druggists formed the Pharmaceutical Society of Great Britain and made it clear that they did not intend to meddle in medicine.

In the same year the members of the board of examiners of the Society of Apothecaries in the course of negotiations with the college of physicians declared. "That one of the chief evils in the present position of the apothecary is his name which has little reference to his actual duties, that his is in fact the medical attendant of the larger mass of the community and should be designated the general practitioner of medicine."<sup>54</sup>

"The name [apothecary] is now practically obsolete in this country [England] with the exception of the titles "Surgeon

Apothecary" and "Apothecary to the Household" still attached to Court appointments held in London, Windsor and Val-moral.

The Society of Apothecaries still remains . . . and its licentiatees may now style themselves physicians and surgeons."<sup>55</sup>

All this quarreling in England between apothecaries and physicians was in direct contrast to the situation in Germany and France where the pharmacists through the ages have been professionalists in their own field and right, and in many cases high ranking chemists and scientists and did not engage in medical practice.

In the United States there is no official separation of pharmacists and physicians except that a physician may not have an open pharmacy unless he be simultaneously a licensed pharmacist. At the time of the founding of the American Medical Association, in 1847, the official interrelationship between the two professions was one of mutual watchfulness rather than of mutual recognition. The Code of Ethics of the American Medical Association adopted in May 1847 refers only once to pharmacy. The passage concerned reads as follows:

"It is the duty of physicians, who are frequent witnesses of the enormities committed by quackery, and the injury to health and even destruction of life caused by the use of quack medicines, to enlighten the public on these subjects, to expose the injuries sustained by the unwary from the devices and pretensions of artful empirics and imposters. Physicians ought to use all the influence which they may possess as professors in Colleges of Pharmacy\* and by exercising their option in regard to the shop to which their prescriptions shall be sent, to discourage druggists and apothecaries from vending quack or secret medicines, or from being in any way engaged in their manufacture and sale."<sup>56</sup>

Later American Medical Association Codes state that physicians should recognize and promote the profession of pharmacy.

This survey shows that there always has been and always will be a close connection between medicine and pharmacy

\* See Wood, G. B. and Bache, F. mentioned above.

and that the later has to be regarded as a branch of medicine. Pharmacy had to be separated from medicine proper when the development of the sciences and practices concerned made a division of labor a necessity. Division of labor, however, is only then meeting its purpose when it is supplemented by the closest cooperation of the people concerned and integration of the work they produce and the service they render.

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Attention is called to the fact that at the Pittsburgh convention, the American Institute of the History of Pharmacy will hold a joint meeting with the Historical Section of the American Pharmaceutical Association. This will create a greater interest in historical study in both groups.—Editor.

## What Value Animal Experimentation\*

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Progress in the sciences dealing with human and animal welfare is hindered because our aims, methods and accomplishments are not well understood and appreciated by all. Misunderstanding makes it possible for some well-meaning persons to join with the anti-medical cult in opposing scientific investigations conducted upon living animals.

The purpose of this article is to show by selected illustrations that progress depends on animal experimentation and that advances would actually be impossible without these studies. For the sake of convenience the material has been divided into several major fields.

### *Anesthesia*

The first field deals with the importance of anesthesia both in surgery and in education of persons who are entering the various health professions, such as medicine, both human and veterinary, dentistry, pharmacy, and nursing.

Even without experiments on animals anesthesia undoubtedly would have been developed, because its discovery was a by-product of the taking of ether by man. But the discovery of newer and better anesthetics would have had to be worked out on man if at all, and only through numerous human fatalities would we have been able to eliminate the unsuitable and dangerous ones.

Following the discovery of ether a little over a century ago, it quickly became apparent that under anesthesia a number of bodily functions and drug actions could be readily demonstrated in the laboratory. Later on it was found more convenient oftentimes to anesthetize animals by administer-

\* At present when a medical discovery is made the method by which it was made is not publicized, and the public is ready to believe the claim that nothing good comes from animal experimentation. The purpose of this paper is to point out the responsibility that teachers of pharmacy, as well as teachers of biology in general, have in informing their students and the public regarding the necessity, humane character, and accomplishments of animal experimentation. Neither the student nor the public realize that the remarkable progress made in the control and cure of disease in modern times has been accomplished almost entirely through and because of experimental work upon animals.

For these reasons the authors of this paper were asked to summarize the facts in a way which would be helpful to teachers in colleges of pharmacy.—Editor.



ing various hypnotics in high dosage, such as barbitol, amytal, pentobartital, paraldehyde, urethane, tribromethanol, evipal or thiopental. The drug and dose can be selected to produce anesthesia for varying lengths of time and unconsciousness can be deepened or prolonged by administering additional doses of the drug in question; also the anesthetic most suitable for each animal species may be selected.

In surgical experiments the anesthesia produced is in depth comparable to that employed for human surgery and the animals used are killed at the end of the acute experiment with an overdose of the anesthetic. The use of stray dogs in this manner means that instead of simply killing them—in the past often by methods less humane than by giving anesthetics, as by administering strychnine or by drowning—they are being used without suffering to instruct students in the health professions, so that these students may secure the best preparation possible for serving human and animal patients.

#### *Nutrition*

In a second field of studies upon animals, the effects of various diets are studied. By such studies we have shown that prevalent diseases, such as scurvy ricketts, beriberi, and pellagra are really due to lack of certain accessory food-stuffs, known as vitamins, in the diet and not due to the sundry causes previously proposed. Lack of calcium and other elements in the diet have also been shown to be detrimental to health and their relation to perfect formation of teeth clarified. The relation of iodine to endemic goiter has been demonstrated. Present investigations on the relation of traces of fluoride to protection against dental caries may come to mean an important step in insuring better teeth for mankind; judging from the records of induction centers for our soldiers, such improvement is sorely needed.

#### *Protection from Poison*

Turning in the opposite direction, the effects of excesses of certain foodstuffs, minerals, vitamins, hormones and various drugs and toxic substances have been recorded through the use of experimental animals. We have learned about the potential dangers of substances used in the treatment of disease. A large number of methods for combating toxic ac-

tions have been established and have proved useful in keeping man and animal alive after medicinal, intentional, accidental or suicidal poisoning. For example, we know how to remove lead safely from the body in chronic lead poisoning. We know how to treat cyanide poisoning with nitrates and sodium thiosulfate, and how to prevent death from strychnine by the use of selected depressants. We have learned the dangerous qualities of many substances such as selenium, carbon tetrachloride, lead, mercury, etc.

Many of the safeguards against industrial poisoning hazards are the direct outcome of animal studies. These safeguards have saved untold millions of workers from being exposed to dangerous concentrations of noxious vapors, deleterious dust, or solvents which slowly injure the internal organs or cause exzema, dermatitis or even cancer.

#### *Infectious Diseases*

A fourth line of investigation has dealt with infectious diseases. It is possible in properly planned tests to compare the success of various treatments on large groups of animals, and, consequently, to choose remedies which seem most promising in the treatment of similar diseases in man and in domestic animals. Prophylaxis by immunization, treatment by sera, antitoxins and antivenins, and the development of the sulfa drugs, penicillin and other antibiotics has resulted from this type of work. Various sera are produced for commercial use by injecting dead pathological organisms or venoms into animals, usually horses and mules. This is the method, for example, by which diphtheria antitoxin and snake antivenin are produced. Without the use of animals in studies upon prevention and cure of infectious and contagious diseases, how many would have died from diphtheria, typhoid fever, scarlet fever, malaria, syphilis, and so on? And who can count those who would have been marred by small pox scars or been damaged irreparably by diphtheria? One need only read the texts of a century ago to picture what the approximate knowledge of our bodily functions would be today had all animal work been stopped then and observations limited to human patients and human volunteers, many of whom would have lost their lives.

#### *Gland Studies*

Another and very important line of investigation has dealt

with the functions of glands. The typical experiments of this type have consisted of removing specified organs and attempting to keep the operated animals alive and in perfect health by suitable extracts and proper diets, thus demonstrating the character of the organ's contribution to the life process. Of course, all such operations are carried out with the same scrupulous care used in operations on man—including perfect anesthesia, aseptic conditions, and rigid post-operative care.

Obviously, if less care were used the state of health of the animal would invalidate the observations, and the experiment would be worthless.

Many fruitful discoveries have resulted from gland studies. As an example, it was known by 1860 that the liver stored sugar as glycogen or animal starch, which it gradually liberated into the blood-stream as dextrose; also, by 1895 it was known that removal of the pancreas in dogs led to production of experimental diabetes, in which sugar could not be oxidized, nor the liver store glycogen. It closely resembled a severe case of diabetes mellitus in man. During the following quarter of a century opportunities were open to every qualified person to discover or prepare an extract or drug which would be useful in keeping such operated animals, simulating the diabetic patient, alive. The practical solution finally did come from experiments upon dogs at the University of Toronto in 1921 by Banting, at the time a recent graduate in medicine, and Best, at the time still a medical student. Their work was later supplemented by the technical assistance of the Eli Lilly Company in perfecting what became known as insulin. As a result of this discovery, diabetics are now being kept alive for their normal span of years, whereas formerly younger persons with diabetes almost invariably died within a few years when diet control of the disease failed. Incidentally, there are more than a million diabetic patients in the United States alone.

Other investigators isolated various hormones and extracts which have since been evaluated by the clinicians. Persons suffering from pernicious anemia may be kept alive by liver extract developed by Minot and Murphy, the former a diabetic being dependent on insulin and inspired by its discovery. Effects of parathyroid removal may be combated by injecting Collip's parathormone. Addison's disease and diabetics

insipidus may be managed by replacement of substances which the body manufacturers in insufficient amounts.

### *Surgical Training*

Still another field is the actual training of the surgeon both of the present and also of the future. While an undergraduate in the physiological laboratories the medical student gains the experience of working with live tissues. He learns how to handle tissues so that they receive the least amount of trauma possible so that the experimental results will be less complicated by avoidable factors. He also develops skill in handling instruments. This skill is obtained by but one way—practice.

Later the student of surgery performs various operations on animals he expects to keep alive. Here his work must be even more exact and painstaking. It is this early necessary practice that makes the difference between life and death for human patients later on. It is this early practice on animals that allows the beginning surgeon to undertake his first operations upon the human body with a feeling of confidence which is so necessary for the relief of anxiety on the part of the patient. He has developed his judgment and operating technic thoroughly, beginning with the very first incision he made upon an experimental animal.

Even for the experienced surgeon, who has long since undergone this intensive training for his work, animal surgery is of utmost importance. The surgeon in this case is able to use animals to determine whether certain new operations are possible. No patient would ever consent to be first for a gastric resection, enterostomy or lobectomy of the brain. Nor should it be expected of the surgeon untrained by similar previous operations on animals to undertake the risks involved. As a result of numerous experimental brain operations on animals the neuro-surgeon of today is able to predict the results of surgery on his patient. It is for these reasons that surgery is today so capable of alleviating much of the misery of mankind.

### *Biological Standardization*

Animal experimentation is constantly needed to evaluate the therapeutic strength of and to determine the toxicity of medicines isolated from plants or animal tissues which do

not produce uniform drugs, even to evaluate some medicines made in the chemical laboratory. The evaluation of the strength of such a drug must be simple, rapid and accurate and must be carried out upon an animal which is as sensitive to the substance as is man and upon an animal in which the action resembles closely that needed in the clinic. Hence a great variety of animals are employed. Thus, anesthetized dogs are used for evaluation of epinephrine by blood-pressure determinations and anesthetized cats for determining the strength of digitalis. The Pharmacopoeia specifies that the ether anesthesia used in these tests must be sufficiently deep to abolish pain.

Young rats are used to establish the therapeutic efficiency of cod and other fish liver oils in regard to vitamin A and D contents. Guinea pigs, which are very sensitive to scurvy, are employed to ascertain how much vitamin C is present in such foods as fruit juices, so that the vitamin strengths may be properly specified on the labels. The strength of insulin—a very potent drug—is found by studying the effects of new samples upon the blood-sugar concentration of rabbits and making comparisons with the effects of a standard, known as a reference standard. (In fact, such standards are now generally used in all bioassays.)

From animal tests upon these very potent drugs, such as insulin, thyroid gland preparations, and digitalis we have learned how to guard against overdosage partly by close observation of the patient for any possible signs or symptoms or toxicity, and partly by instructing the patients what to do in case they experience such symptoms.

Toxicity tests upon mice or rats are carried out when our present technic for synthesizing such powerful drugs as the organic arsenicals of the arsphenamine type is not sufficiently good to insure 100 per cent yields of the desired substance. If the product is too toxic for mice, evidently it would likely be dangerous for men also.

What a state of confusion would exist today if every manufacturer were permitted to put on sale new medicines which had not been properly studied. Naturally, the manufacturer would tend to be superoptimistic concerning the main action of beneficial nature, even though, according to Clark, actual experience has shown that of new products probably only



one in a hundred would be good and one in a thousand excellent. Fortunately our pharmaceutical, veterinary, dental and medical councils demand that before a new drug is put on sale, many lines of investigation be carried out to make certain that it really has superior qualities as compared with older ones used for similar purposes and that it does not possess toxic properties apt to demonstrate themselves when the new medicine is taken over considerable periods of time—something frequently required in many types of disease or illness.

### *An Alternative?*

Those persons who are opposing animal experimentation should be required to demonstrate how medical problems could be solved without biological studies. There is no other way at the present time to tell what a new drug will do except to try it out. There is no method which will predict results with certainty, even when substances resemble each other closely in chemical structure. There is no technic which will tell what the fate of a substance will be in the body except administering it and following what happens to it. And there is no possibility of knowing whether a tissue extract will benefit a case of deficiency except by producing the deficiency and administering the extract to determine its efficiency.

To illustrate some of these points: who could by looking at barbital and thiopental, knowing their chemical formulas and, in general, their physical and chemical properties, predict that in case of the former the action would be slow in onset and would be very prolonged and that more than half would be excreted as such by the kidneys, whereas in the case of thiopental, action would be very prompt and brief and that practically all would be detoxified in the body so that only traces would be found unchanged in the urine? Who could, by knowing such properties as mentioned and by all the meditation in the world, predict that in the case of the white rat it takes about twice as much strychnine, evipal, amytal or picrotoxin to kill a male as it does a female rat, that with barbital no such sex-difference can be shown, and that with ouabain it takes nearly twice as much to kill the female as it does the male. Furthermore, that with, for example, two of the mentioned drugs, evipal and picrotoxin, having depressant and convulsant action, respectively, such high



male resistance would be found only in the rat, but not in the closely related mouse, nor in the guinea pig, rabbit, cat or dog!

Also, how may one know by simple inspection that the toad is highly resistant, but that the related frog is quite sensitive to digitalis, that it is nearly impossible to kill a rat with digitalis, because one cannot be quite certain that it did not die from the alcohol that forms a part of the solvent for this drug, but that the guinea pig is more sensitive and the cat very sensitive to this drug?

No one would be more happy than the pharmacologist if anyone of those opposing his work would show him how the above may be done without actual trial in every case to learn the actions and fate of drugs. The pharmacologist would like to know the real cause of the mentioned specific sex-variations and how to select a suitable assay animal by simple inspection or intuition. He would like to know how to assay the strength of a drug sufficiently accurately by chemical or other methods, especially when dealing with drugs that are mixtures of several potent agents. This is an open challenge to antivivisectionists to demonstrate that progress can be made without animal testing, and there are many fields open in which to do so, such as cancer, acute articular rheumatism, degenerative organ changes, gigantism and other endocrine hyper- or dys-function disease, and many others.

If antivivisectionist after having secured full information about animal experimentation still are adverse to research work they might well expend their time and ample means in helping to provide methods that as far as possible would make work upon animals unnecessary, such as providing moving pictures of teaching experiments, and by allowing themselves or others paid for their sacrifices to be used as test-objects in scientific investigations dealing with nutrition and other phases of human physiology and with disease. The antivivisectionists should match the contributions of the investigators who have never spared themselves in their constant search for truth, as testified to by numerous reports of experiments upon themselves and a long row of tombstones honoring those who gave their lives in this search.

## Identification Tests on Pharmaceutical Preparations

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The University of Minnesota College of Pharmacy requires that students attain a reasonable degree of proficiency in identifying by odor, taste and appearance some of the more commonly used U. S. P. and N. F. preparations. This study is a minor part of the Pharmaceutical Preparations sequence of courses offered in the sophomore and junior years. For study purposes the preparations are contained in wide-mouth square bottles of a capacity of two fluid ounces. The bottles of the study set are identified only by numbers which correspond with numbers on a key list of the preparations. Numbering the bottles, either with a Vibro-tool or with Gold Seal white laboratory ink has proved satisfactory. Preparations such as Saponated Solution of Cresol, Tincture of Digitalis, Solution of Ferric Chloride, *etc.*, bear a warning label, "Taste Cautiously". Although the legend may partially identify the preparation to the students by indicating that it is one of a group which must be handled carefully, nevertheless it is considered necessary as a safety measure.

Each test includes twenty-five preparations in bottles, numbered from one to twenty-five, which are distributed in numerical order around the laboratory at stations separated sufficiently to prevent surreptitious communication between students. At one time fifty preparations were included in the test but experience has proved this number to be cumbersome and the grades were no better than those obtained from tests with the lesser number of preparations. The students are allowed 50 to 60 seconds at each station and the entire class moves in unison on signal from the instructor. During a test the students follow a circuitous route which is indicated by directional arrows painted on the desk tops and floor with an aqueous suspension of whiting. If the class numbers more than 30 students it is sectioned and the sections are kept from communicating with each other until all have taken the test. If the class contains between 25 and 30 students, the students over 25 are accommodated by placing a corresponding number of "rest" stations in the route.

Identification tests are initiated each year when the didactic consideration of the various groups of preparations has progressed sufficiently to include more than 25 preparations. Thus the first test usually covers waters, an infusion, and syrups. As additional groups are considered in lecture they are added to the study set and included in the tests. Later, in order to keep the volume of material within reasonable limits, the first groups are dropped from the scope of the tests but a review test is occasionally included to keep the students on the alert. The final test for each quarter includes preparations from every group studied up to that time.

Frequent attention to the study set is needed to keep the bottles and preparations clean and free from contamination. In order to minimize cross-contamination of the preparations in the study set, as well as contamination with bacterial or virus infections, students are given special instruction in handling the bottles and the study periods are supervised to see that the instructions are followed. Each student is required to carry and use a clean towel, both during study periods and tests. Fortunately, students soon acquire the ability to identify many of the preparations without the need of tasting them, but if tasting is necessary they are instructed to transfer a small amount of the preparation, either from the stopper or by pouring from the bottle, to the back of the hand and then to the mouth. Obviously, the back of the hand must be washed frequently.

The training of students to identify preparations by purely physical characteristics extends back to a period some years ago when U. S. P. and N. F. preparations as such were more prominent in the materia medica of the practicing physician than they are today. As a part of the preparation for licensure examinations, students in colleges of pharmacy as well as non-college apprentices (in the days before formal educational requirements were established) devoted some time to a study of the appearance, taste and odor of the various official preparations. What use did the licensed pharmacist continue to make of this training? The careful pharmacist used this knowledge and skill as a double check on the identity of preparations which he dispensed alone or in a compounded mixture. The pharmacists are legion who meticulously check the identity of each preparation at least by odor and appearance, either before, during or after it is re-

moved from the shelf bottle. It is additional assurance to him that he is using the correct preparation and that it is of official quality. Too many pharmacists dispense preparations which have deteriorated in some minor, or even major, respect—Syrup of Citric acid with a terebinthinate taste (and odor), Solution of Potassium Iodide with a yellow or brown color, Solution of Boric Acid with crystals in suspension, Tincture of Digitalis and other liquid preparations of vegetable drugs with suspended material, and a host of other possibilities. The frequency with which this happens can be reduced considerably by pharmacists trained to recognize an "elegant" pharmaceutical preparation.

One might suggest that the modern trend of medical practice toward the use of chemotherapeutic and antibiotic agents, with their rather simple medication forms for both oral and parenteral administration, should require less emphasis upon training a pharmacy student to identify preparations. While it is true that the pharmacist may use the preparations less frequently it is still important that he be able to identify them, within reason, and that he be alert to recognize in them evidences of deterioration. Not more than one substandard ingredient in a compounded prescription, even if it is only a slight cloud in a preparation supposed to be clear, will affect the appearance of the finished prescription. If the customer later obtains a refill of the same prescription, compounded with ingredients of official quality, and finds it clear instead of cloudy, he may ask embarrassing questions of the pharmacist.

In addition to the benefit, possibly minor, to pharmacy and the public, of a pharmacist qualified to quickly identify official preparations, the training also develops the student's power to observe and sharpens his senses of taste and smell. This is of probable benefit in other areas of study in the pharmacy curriculum, many of which present to the student a flood of factual information which he must classify as important, less important and unimportant. One definite benefit noted in the Pharmaceutical Preparations courses is an improvement in the extent to which the student learns the correct names of the preparations and in the facility with which he can use them. This is necessary in a test in which the preparation must be identified and the Latin or English name written on the test form within the allotted 50 or 60 seconds. The test

form is a printed sheet with a column of horizontal lines numbered in sequence from one to twenty-five.

The preceding discussion leads up to the principal object of this article, *i.e.*, to present, from a four-year survey of identification tests written by pharmacy students, data on the success which attended their efforts with each preparation. With this information the instructor can point out to students the preparations which require more intensive study and he can point out, test by test, how their efforts compare with the average attainment of past students. The accompanying *Table 1* lists the preparations, the number of times each has been given to a student to identify, the number of correct identifications and the percentage of correct identifications. *Table 2* lists the preparations alphabetically and gives the corresponding figures showing percentage of correct identifications. It lists the same preparations as *Table 1* but in a more logical order for use in teaching.

Even though it is significant, no attempt has been made to evaluate the influence of scope upon the results. For instance Solution of Iodine presents little difficulty in a test on syrups and solutions, but add to these groups the tinctures and Tincture of Iodine, and confusion develops. Likewise, waters and spirits of the same oils, together in the same test, present difficulties. Medicinal syrups containing official vehicles are confused with the vehicles and the vehicle with the medicinal syrups. Syrup of Bromides and Compound Syrup of Sarsaparilla are examples of a troublesome medicinal syrup and its vehicle. Obviously, the confusion is caused by failure to differentiate between alcoholic and aqueous solutions or failure to recognize the salty taste of bromides. The student soon realizes that he must "bear down" on his preparation for the tests and usually the results of each succeeding test show improvement. This improvement is not reflected in the data given in the tables. The colorless preparations without distinctive odor and taste present the greatest difficulty.

One may criticize the selection of the preparations used for test purposes. It is safe to say that no two instructors will agree on the scope of such a testing program. One may be inclined to enlarge the scope considerably while another insist that more emphasis be placed upon preparations with

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distinctive characteristics, such as color and pronounced odor. Still others may question the value of any attempt to train the student in this area. The information is presented for the use of teachers of pharmacy who may be teaching, or may wish to begin teaching in this field.

TABLE NO. ONE

Preparations	Number of times used in tests	Number of correct identi- fications	Per cent of correct identi- fications
Magma Bentoniti	37	37	100
Syrupus Cacao	90	90	100
Liquor Amaranthi	134	138	97.0
Liquor Ammoniae Dilutus	392	404	97.0
Mistura Cretae	231	239	96.6
Liquor Merbromini	161	169	95.3
Liquor Aromaticus Alkalinus	294	309	95.1
Liquor Formaldehydi	353	378	93.4
Spiritus Menthae Viridis	248	270	91.8
Spiritus Menthae Piperitae	317	346	91.6
Liquor Cresolis Saponatus	357	395	90.5
Magma Bismuthi	160	180	88.8
Spiritus Camphorae	300	339	88.5
Aqua Camphorae	273	308	88.5
Infusum Digitalis	301	341	88.2
Spiritus Ammoniae Aromaticus	312	356	87.5
Tinctura Ferri Chloridi	307	353	87.0
Glyceritum Acidi Tannici	113	130	86.9
Glyceritum Boroglycerini	113	130	86.9
Tinctura Iodi Mitis	383	441	86.9
Aqua Menthae Viridis	234	270	86.6
Liquor Antisepticus	459	532	86.3
Liquor Iodi	454	530	85.5
Tinctura Opii Camphorata	427	500	85.4
Spiritus Aethylis Nitritis	186	223	83.3
Aqua Cinnamoni	100	122	82.0
Aqua Menthae Piperitae	280	342	81.8
Magma Magnesiae	168	206	81.5
Syrupus Scillae	123	151	81.4
Mucilago Tragacanthae	74	91	81.4
Tinctura Aurantii Dulcis	225	283	79.5
Liquor Sodii Chloridi Isoton.	356	448	79.4
Tinctura Benzoini Composita	344	433	79.4
Tinctura Digitalis	366	470	78.9
Spiritus Lavandulae	173	220	78.6
Syrupus Glycyrrhizae	220	282	78.0
Tinctura Benzoini	292	374	78.0
Mucilago Acaciae	197	256	76.9



Aqua Chloroformi	179	233	76.8
Syrupus Rubi Idaei	94	123	76.5
Fluidextractum Cascarae Sagradae	305	400	76.4
Syrupus Cerasi	180	236	76.3
Fluidextractum Cascarae			
Sagradae Aromaticum	387	501	75.2
Fluidextractum Glycyrrhizae	370	494	75.0
Aqua Rosae (Fortior)	147	194	75.0
Syrupus	156	209	74.7
Liquor Picis Carbonis	240	322	74.5
Liquor Ferri Chloridi	313	422	74.2
Liquor Plumbi Subacetatis Dilutus	508	685	74.2
Mistura Opii et Glycyrrhizae Composita	150	206	72.8
Syrupus Picis Pini	149	204	73.0
Syrupus Ferri Iodidi	321	442	72.7
Liquor Hydrogerii Peroxidi	473	654	72.5
Liquor Ferri et Ammonii Acetatis	272	377	72.2
Syrupus Pruni Virginianae	276	392	70.4
Syrupus Bromidorum	243	350	69.4
Syrupus Acidi Citrici	268	391	68.5
Syrupus Acaciae	122	183	66.7
Aqua Aurantii Florum	94	139	67.5
Liquor Calcii Hydroxidi	395	594	66.5
Syrupus Balsami Tolutani	314	502	62.5
Tinctura Limonis	259	404	62.5
Tinctura Cinchonae Composita	38	64	59.4
Spiritus Aurantii Compositus	149	251	59.4
Syrupus Aurantii Florum	179	312	57.4
Tinctura Balsami Tolutani	219	396	55.3
Aqua Anisi	49	91	54.0
Syrupus Rhei	132	250	52.4
Syrupus Eriodictyi Aromaticus	156	301	51.8
Syrupus Ipecacuanhae	167	331	50.5
Syrupus Sarsaparilla Compositus	238	474	50.3
Syrupus Rhei Aromaticus	181	364	49.7
Syrupus Pini Albae Compositus	227	477	47.5
Aqua Foeniculi	86	183	47.0
Syrupus Zingiberis	174	381	45.7
Syrupus Sennae	164	361	45.4
Syrupus Aurantii	200	454	44.0
Syrupus Acidi Hydriedici	116	297	39.0
Syrupus Scillae Compositus	112	360	31.1

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TABLE NO. TWO

Preparation	Per cent of correct identi- fications	Preparation	Per cent of correct identi- fications
Aq. Anisi	54.0	Sp. Aethyl. Nitritis	83.2
Aq. Aurant. Flor.	67.5	Sp. Ammon. Arom.	87.5
Aq. Camphorae	88.5	Sp. Aurant. Comp.	59.4
Aq. Chloroformi	76.8	Sp. Camphorae	88.5
Aq. Cinnamomi	82.0	Sp. Lavandulae	78.6
Aq. Foeniculi	47.0	Sp. Menth. Pip	91.6
Aq. Menth. Pip.	81.8	Sp. Menth. Vir.	91.8
Aq. Menth. Vir.	86.6		
Aq. Rosae (Fortior)	75.0	Syrupus	74.0
Fldext. Casc. Sag.	76.4	Syr. Acaciae	66.7
Fldext. Casc. Sag. Arom.	75.2	Syr. Acid. Citrici	68.5
Fldext. Glycyrrhizae	75.0	Syr. Acid. Hydriod.	39.0
Glycer. Boroglycerini	86.9	Syr. Aurantii	44.0
Glycer. Acid. Tannici	86.9	Syr. Aurant. Flor.	57.4
Infusum Digitalis	88.2	Syr. Balsam. Tolu.	62.5
Liq. Amaranthi	97.0	Syr. Bromidorum	69.4
Liq. Ammon. Dil	97.0	Syr. Cacao	100.0
Liq. Antisepticus	86.3	Syr. Cerasi	76.3
Liq. Arom. Alkalinus	95.1	Syr. Eriodict. Arom.	51.8
Liq. Calcii Hydrox.	66.5	Syr. Ferri Iodidi	7p.7
Liq. Cresolis Sap.	90.5	Syr. Glycyrrhizae	78.0
Liq. Ferri Chloridi	74.2	Syr. Ipecacuanhae	50.5
Liq. Ferr. et Ammon. Ac.	72.2	Syr. Picis Pini	73.0
Liq. Formaldehydi	93.4	Syr. Pin. Alb. Comp.	47.5
Liq. Hydrog. Perox.	72.5	Syr. Prun. Virg.	70.4
Liq. Iodi	85.5	Syr. Rhei	52.4
Liq. Merbromini	95.3	Syr. Rhei Aromaticus	49.7
Liq. Picis Carbonis	74.5	Syr. Rubi Idaei	76.5
Liq. Plumb. Subacet. Dil.	74.2	Syr. Sarsap. Comp.	50.3
Liq. Sod. Chlor. Isoton.	79.4	Syr. Scillae	81.4
		Syr. Scillae Comp.	31.1
		Syr. Sennae	45.4
		Syr. Zingiberis	45.7
Magma Bentoniti	100.0	Tr. Aurant. Dulcis	79.5
Magma Bismuthi	88.8	Tr. Balsam. Tolut.	55.3
Magma Magnesia	81.5	Tr. Benzoini	78.0
Mistura Cretae	96.6	Tr. Cinchon. Comp.	59.4
Mist. Opii et Glycyrrh. Comp.	72.8	Tr. Digitalis	78.9
		Tr. Ferri Chloridi	87.0
		Tr. Iodi Mitis	86.9
Mucil. Acaciae	76.9	Tr. Limonis	62.5
Mucil. Tragacanthae	81.4	Tr. Opii Camphorata	85.4

## Limitation of Enrollment in Colleges of Pharmacy\*

ERNEST LITTLE

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The question of limitation of enrollment in colleges of pharmacy constitutes a problem which is very properly, receiving considerable attention at this time. That is as it should be. Ample discussion is greatly needed. Inadequate attention, with resultant, improper regulation or lack of regulation, may result disastrously to the profession of pharmacy.

I think we can all agree, at least in a general way, that it is hardly possible, in a democracy, to have too many educated citizens, or even too many college graduates. I am sure you all appreciate the possible difference between these two groups.

Much good and no harm may result in having our arts and sciences colleges filled to capacity at all times with students who are interested in and are receiving a broad general education. It is such courses and curricula which should carry the major load when colleges are confronted with unusually heavy demands as they are today, and as is likely to be the case for a number of years to come.

It is not altogether wise to graduate more chemists, physicists, geologists, engineers, dentists, lawyers, or physicians than can be properly assimilated and used by the respective professions. In many instances, the profession is injured by turning out more professionally trained men than can find adequate professional work in their professional fields. The term "ambulance-chaser", was made possible by an overcrowding of the legal profession. Inadequate professional work in their own field, especially during periods of industrial depression has encouraged some physicians to engage in office dispensing, a professional activity for which they are not adequately prepared and in which they encroach upon the responsibilities of the registered pharmacist.

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\* Presented at the meeting of District No. 2, Boards and Colleges, in Philadelphia, April 8, 1946.

I would call to your attention, however, that, for the above professions, it is the individual practitioners, rather than the professions which are most injured as a result of overcrowding.

When we turn to the profession of pharmacy, we find quite a different situation. The pharmacist does suffer personally as a result of overcrowding, but much less than does the profession itself and therein lies the danger.

The fact that pharmacy is usually practiced in a place where merchandizing activities are carried on is a constant threat to our professional practice. The pharmacist can always find something to do in his place of business. When his professional work decreases, whether it be due to poor economic conditions, an increase in office dispensing on the part of the physician, or to the fact that there are too many stores in his neighborhood, the pharmacist is quite naturally tempted to still further broaden his activities, to add to his already numerous side lines and thus cause pharmacy to develop in a direction along which it has already traveled too far.

I am not presenting a blanket indictment of merchandizing in retail pharmacies. I realize that the American people are very exacting and that they demand an availability of pharmaceutical service which at the present time is being met by having a considerable number of retail pharmacies in which merchandizing activities are carried on. This condition, when held within reasonable limits, need not cause any lowering of the quality of professional work. It does tend to make pharmaceutical service more available to the people and to reduce the cost of strictly professional services.

The point which I am establishing is that extravagant enrollment in our colleges will cause pharmacy to develop more as a business and less as a profession. Its practitioners will become more attentive to the standards of the market place and less in tune with the spirit and dictates of truly professional practice.

It is professional work, and not the merchandizing activities of the retail pharmacist in which you and I are primarily interested. We do not aim to contribute to the development of the pharmacist as a buyer and seller of odd and sundry arti-

cles of merchandise. We are eager to aid in his continued growth as a practitioner of pharmacy.

There are many important factors involved in the development of such a professional man. The consideration which interests us in this discussion is the maintenance of adequate, but not excessive manpower. One extreme is as dangerous as the other.

It is presumptuous on my part to tell you that the years immediately ahead are critical ones for colleges of pharmacy and for the profession of pharmacy.

We can rationalize ourselves into an extravagant program of enrollment which, on the surface, may seem quite reasonable but which is fraught with danger and which will damage the profession, if allowed to prevail.

We shall be subjected to great pressure by veterans and veterans' organizations to provide as adequately as possible for returning G. I.'s. Young men who have risked their all in defense of their country must be given very careful and sympathetic attention, but we should never lose sight of the fact that the welfare of pharmacy and the more than one hundred and forty million people whom it serves is of more importance than the welfare of any individual or group of individuals, no matter how worthy they may be.

We will be told that there is a great shortage of registered pharmacists which must be made up before we restrict enrollments in our colleges of pharmacy. I believe such a shortage does exist, especially insofar as providing for our present outlets is concerned. It is also important that we keep in mind that during the war years, a period of some inflation, an entirely adequate pharmaceutical service was maintained, in spite of the fact that many thousands of registered pharmacists were serving in the armed forces. It is to the credit of pharmacy that this challenge has been met. It could have been met with much less hardship to registered pharmacists if they had been able to devote more of their time to professional work and less to merchandizing activities.

I am going to make a statement which I probably could not prove, to the satisfaction of all of you, even if I had ample time available to do so. I believe that fifty per cent of our existing pharmacists could provide an adequate pharmaceuti-



cal service if differently organized and properly distributed.

We appreciate that colleges of pharmacy have experienced some very lean and distressing years during the war period. In some instances it may seem almost essential for them to recoup their losses, now that the opportunity presents itself. How often have we heard the statement, "After all we must be realists". I am not going to be too critical of such statements or of the people who make them. I believe I am maintaining a realistic viewpoint, however, when I caution that the guiding policy of colleges of pharmacy should always be the basic consideration "What is best for the profession of pharmacy. When a college finds itself unable to maintain such an attitude and such a consequent program, its essentiality in the field of pharmaceutical education is greatly reduced and possibly no longer exists. I trust that statement does not sound unsympathetic or unkind. I do not so intend it.

To come back to the title of this paper, I believe that all of us agree that there should be a limitation of enrollment in colleges of pharmacy. The real question involved is "What should that limitation be and how and by whom should it be maintained?" Those questions are not easily answered, but I believe they can be adequately handled if we sincerely resolve to do so.

In the hope of proving helpful, may I relate a mere outline of what we have done in New Jersey. I realize that the problem there is relatively uninvolved because, altho New Jersey is a large state in population, it is small in size and fortunately has but one college of pharmacy within its borders. Nevertheless, if we have done at all well, some sort of a helpful pattern may have been established.

Realizing the problems confronting us in post war days, I requested Mr. John J. Debus, Secretary of the New Jersey Pharmaceutical Association to make a careful study of the situation in our state and make recommendations to my Board of Trustees. This was done by Mr. Debus in conjunction with the office of the Board of Pharmacy and I feel the report and recommendations involved are very helpful.

A summary of Mr. Debus' findings is presented in the November, 1945, number of the *New Jersey Journal of Pharmacy*. If you will take time to read this article, you will see

that Mr. Debus very properly assumes that in order to adequately handle the problem of limitation of enrollment in colleges of pharmacy, we must have both a basic policy and a statistical foundation from which to proceed.

Mr. Debus presents five helpful tables in his report:

Table #1 deals with the number of registered pharmacists in the state. It presents, (1) The number renewing registration, (2) The number residing outside the state, (3) The number residing in New Jersey, (4) The number of registered pharmacists employed in New Jersey pharmacies, (5) The number of registered pharmacists unemployed, and (6) The number of registered New Jersey residents employed elsewhere than in New Jersey pharmacies. These data are given for eight years, up to and including January 1, 1945.

It is, of course, impossible to discuss these tables in any detail in this article. I refer them to you for more careful study. In line 4 of this table, we see that the number of registered pharmacists employed in New Jersey pharmacies has decreased from 3178 in 1937-38 to 2691 as of January 1, 1945.

Table #2 shows the gains or losses in registration for the same eight years covered by Table #1. This table gives considerable important data. It lists in separate columns for each of the above years, (1) The number of pharmacists registered by examination, (2) the number registered by reciprocity, (3) total number of new registrants, (4) losses by death, (5) losses by reciprocity, (6) total losses, and (7) net gain or loss. It also gives the number of registered pharmacists and the number of unregistered pharmacists in military service as of January 1, 1945.

This table shows the total number of new registrants decreasing from 88 in 1937-38 to 49 in 1943-44. It also shows a net gain of 10 registered pharmacists in 1937-38 as compared with a net loss of 23 in 1943-44.

Table #3 shows the number of graduates of the New Jersey College of Pharmacy and the number of graduates of other colleges passing Board of Pharmacy examinations in New Jersey for the years 1938-1944 inclusive.

Table #4 furnishes considerable useful data relative to the number of pharmacies in New Jersey. Among these data we

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find that (1) The total number of pharmacies have decreased from 1868 in 1937 to 1739 in 1945. (2) The number of chain stores in the state have decreased from 134 in 1937 to 95 in 1945 (3) The population per pharmacy has increased from 2226 in 1937 to 2521 in 1945 and finally (4) That the average number of registered pharmacists per pharmacy decreased from 1.7 in 1937 to 1.6 in 1945.

The fifth and last table gives many important prescription statistics, *e.g.*, (1) The total number of prescriptions filled in New Jersey has increased from 6,543,285 in 1937 to 9,401,619 in 1943. (2) The average number of prescriptions per pharmacy increased from 3,593 in 1937 to 5,705 in 1943. (3) The average number of prescriptions per pharmacists increased from 2,059 in 1937 to 3,496 in 1943. (4) The average number of prescriptions per capita increased from 1.61 in 1937 to 2.25 in 1943 and finally (5) The average number of prescriptions per pharmacist per week increased from 39.6 in 1937 to 67.27 in 1943.

We do not present these data as a model for the purpose intended, but I do think they show what can be done, even in an amateurish way, without too great an expenditure of time, in order to obtain a reasonably accurate basis of judgment for the problem under consideration. Certainly the conclusions arrived at will be more accurate than those based on guesses or personal opinions.

From this factual background, Mr. Debus proceeds to draw some conclusions as to what our college registration should be and here I shall quote him rather accurately. "Using the charts which I prepared from reliable data furnished by the Board of Pharmacy, I have arrived at some conclusions as to the number of pharmacists and pharmacies needed to furnish adequate service to the people of New Jersey.

"The data found in the five tables at your disposal and other reliable statistics not included in the charts reveal that the New Jersey average ratio of population per pharmacy closely follows the national average. It further appears reasonable to assume that the year July 1, 1940 to June 30, 1941 is the most normal year on which to establish an estimate of the number of pharmacies and pharmacists needed to furnish adequate services to the people of the state.

"By referring to the charts, it will be seen that there was in this period one pharmacy for each 2300 population, served by 3000 registered pharmacists, or a ratio of 1.63 pharmacists per pharmacy. On this basis, it may be assumed that New Jersey can adequately support 1800 pharmacies employing 3000 registered pharmacists, again a ratio of 1.63 pharmacists per pharmacy. A breakdown of the most recent data compiled by the Board of Pharmacy indicates that approximately 200 registered pharmacists must be available to supply the need for services other than in retail pharmacies. Accordingly, New Jersey with its present population can safely afford to maintain an average of 3200 registered pharmacists for services within its borders.

"Statistics supplied by a reliable source on an actuarial basis indicate that about  $2\frac{1}{2}\%$  of registered pharmacists are removed from active service each year by reason of death, retirement or transfer into other fields of endeavor. From information appearing in table #2, I believe it is safe to assume that total losses are approximately the  $2\frac{1}{2}\%$  above referred to.

"On this basis, to maintain an average of 1800 pharmacies and 3200 registered pharmacists, required to serve the people of New Jersey, replacements of 80 per year will be required. It can be anticipated that 10 of these will come thru reciprocal registration from other states (Table #2, line 2). Another 10 will acquire their educational qualifications from colleges outside New Jersey (Table #3, line 2) making it necessary for the State College to furnish a minimum of 60 applicants for registration each year."

Mr. Debus then entered into a discussion of the average age of registered pharmacists practicing in New Jersey. During this discussion he makes the following statement, "A recent survey by the Board of Pharmacy reveals that 48% of our registered pharmacists are over the age of 45 years and only 34% are under the age of 38 years." After making due allowance for these facts, he concludes with this statement, "I therefore conclude that our College of Pharmacy can safely graduate 80 students per year."

Mr. Debus does not pretend to be a professional maker of surveys, but we feel he has done a very acceptable job. Certainly his conclusions will prove helpful to us.

During the ten years the full four year course in pharmacy has been in operation, we have turned out on an average per year slightly more than 50% of the number Mr. Debus says we might safely graduate. We believe that is not an unfortunate situation. We feel that maintaining a reasonable shortage of registered pharmacists is one of the conditions which will tend to promote greater professionalism on the part of retail pharmacists. We shall aim to graduate, during the next decade, not more than 75% of the number Mr. Debus tells us would be acceptable.

I am wondering if all or most states containing colleges of pharmacy could not make surveys similar to the one I have referred to. Certainly some of you could greatly improve upon what we have done, even though the task would be more complicated in some instances. Massachusetts, *e.g.*, would have to consider the needs of Maine, New Hampshire and Vermont, as well as the state of Massachusetts.

The problem would be quite involved in New York State and might have to be carried out on a regional basis. I believe, however, that a group approved of by the colleges, the State Board of Pharmacy, and the State Association could make a survey and draw conclusions which would prove helpful to all concerned and certainly to the profession of pharmacy. After the needs of the New York City district, *e.g.*, had been determined, allotments for the four city colleges could be suggested as a guide for the colleges involved. Suggested allotments might be made on a basis of past enrollments, available physical plant facilities, including apparatus and equipment, the size and quality of the teaching staff, and prospects of proper future growth.

In conclusion I should like to suggest that in the interests of pharmacy, reasonable limits of enrollment should be set up in each state based upon some statistical and analytical survey which seems most appropriate and helpful for the state involved.

To those of you who may conclude that no such procedure is possible in your state, I shall further attempt to prove helpful by saying that there is still something that can be done, and to that end I shall tell you a story about the farmer who was being urged to buy a volume on "Modern Farming" by an ultra-enthusiastic book agent. After the agent had completed



his sales talk, the farmer replied, "You don' need to talk to me sonny, I ain't got no use for it." The agent acted surprised and responded, "You mean to tell me you can't use this book to good advantage? Why it would enable you to increase you efficiency 100%. Think what that would mean to you in dollars and cents." Without hesitation the farmer replied, "I can't help it boy. I ain't got no need for that book. I hain't never farmed half s well as I know how yet."

It may well be that the moral of that story does not apply to more than one person in his room. I know that I can profit from it. If we will all resolve to do as well as we know how relative to the limitation of enrollment in our respective colleges, I feel quite certain that the problem will be adequately handled, and that by so doing, we shall have made at least a modest contribution toward obtaining for pharmacy its place in the sun which we all believe it will occupy.

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## Is Acceleration a Suitable Program for Peacetime Pharmaceutical Education?\*

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Acceleration, with all its implications to the teachers who have been through it for the past four years, is perhaps one of the most disagreeable words in the educators' vocabulary. In 1944, Lee (1) indicated that few schools of pharmacy would remain accelerated for much longer, and indeed many never accelerated their teaching work in pharmacy. In 1945, Jenkins (2) dismissed the subject as requiring no further comment, and the executive committee of the A. A. C. P. decided in November of the same year that all schools should drop the plan by this summer.

Now, with V-J Day almost a year past, we find agitation from many quarters for a continuation of the war-time pace. Press reports indicate that most of the pressure is being exerted in the coastal states. Perhaps this is because these areas have the majority of the "Big Name" colleges, or perhaps it merely indicates population centers. It is said that 38

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\* Presented at the Philadelphia meeting of District No. 2 of the Boards and Colleges, April 8, 1946.

colleges are attracting 41% of the veterans returning to academic life. In New York, Governor Dewey has asked the institutions of the state to double their previous maximum enrollments by fall. He also suggested a central agency to direct prospective students to institutions which have vacancies. Ohio State University is reportedly trying to arrange for some of its students to take their first year of work in other lesser-known institutions, apparently with the idea of relieving the pressure for the year in which it will probably be greatest. About a week ago, Reconversion Director Snyder asked seven Federal Agencies to formulate a joint program of action to make sure that the maximum number of veterans will benefit from the educational provisions of the G. I. Bill of Rights. The outcome of this project will be awaited with interest. These are a few of the suggestions which have been offered to solve the problem confronting so many institutions today.

On the other hand, the U. S. Office of Education's semi-monthly "Higher Education", noted about a year ago that "Many veterans who contemplate continuing their education appear to have decided to postpone returning to school and to take advantage of the present opportunity . . ." for high earnings (3). Perhaps this situation has changed somewhat by now. However, one of our West Coast deans has just called attention to the fact that applications for admission to many schools are coming from a wider area than normal (4). It is suggested that this may " . . . create an exaggerated picture of the number of veterans who will actually enter pharmacy schools in the future." According to this source, the veterans are trying to assure themselves of suitable living accommodations by applying to several schools instead of just one.

Thus, it would seem worth-while for educators to investigate all the sources of pressure for acceleration. Let us look at the groups involved. Do the veterans want acceleration continued? Most of them have a desire to "make up for lost time." No one will deny them a right to the careful consideration of their wishes. Do the prospective employers want it? In many instances, these seem to be the most vociferous proponents, at least in Virginia. However, I have never heard a proprietor of a semi-professional or professional store suggest that we should stay on an accelerated program, and several

have indicated their opposition. Do the manufacturers want an accelerated program? I think so. The demand for more outlets is well known. The latest pamphlet of the American Foundation for Pharmaceutical Education which appeared recently might be interpreted as meaning that it was still desirable at this time to keep pharmacy before the high school pupils even though most of the colleges are overcrowded.

Do college administrators want acceleration to continue? Perhaps, in some instances. If this be true, then why do they take such a stand after having heard its faults repeated these past four years? Without wishing to seem cynical, one cannot help wondering how much of an operating deficit some school have accumulated during the war. Some of the proposals now made for pharmaceutical education in the name of patriotism and appreciation to our veterans remind one of a desperate pauper's frantic efforts to meet his banker's notes.

These comments are not meant to be unkind, for we all know individuals in each group who sincerely believe they are taking a fair and realistic stand. However, it may be suggested that aside from veterans, most of the pressure we are experiencing today comes from some individuals who, for their own interests, pay lip-service to educational standards and professionalism and at the same time ask indirectly that they be destroyed by overproduction on the part of the colleges. Have any of you seen this matter discussed in the publications of the Association of American Medical Colleges? Or the American Association of Dental Schools? No, ladies and gentlemen, they have done with compulsory acceleration and remember it only as an unpleasant experience.

Before proceeding further, let us ask ourselves the function of a school of pharmacy. Is not the principal excuse for its existence the education of adequately trained pharmacists for the area it serves? If this is true, then we as educators should attempt to place the welfare of the students and of the public which they will eventually serve foremost in our deliberations. We should remember that if the pharmacists of the country were to confine themselves to pharmaceutical and strictly related duties, there would be far fewer people clamoring for more of them. It has been my good fortune to have seen an advance copy of Dean Little's paper which you will

hear later today. His statistics on the number of prescriptions filled per pharmacist will bear out my statement.

From an educational point of view, however, we can discuss the problem of acceleration under three heads.

1—*Hardships*: Acceleration of the program of study in schools of pharmacy works hardships on both students and faculty, but for different reasons.

The student who fails a course cannot make it up as readily as before because our member schools usually can get a new class only once in twelve months, yet the accelerated program requires one to continue from class to class every nine months. Consequently, such a student should be two classes ahead of the one he has failed before it can be repeated. Our experience has been that this condition often leads to serious scholastic difficulties for the student who tries to go on so long before remedying his deficiency.

Among our veterans, we have many former students of other colleges who have completed work varying from one semester to a full baccalaureate course in these institutions. They usually are capable of carrying a full schedule of work, choosing certain courses from various years of our curriculum. The accelerated program leaves us with a maximum of three classes at any one time, instead of the four classes we had in pre-war days. As a result, a full schedule is not always available to many of these very desirable students. We would remedy this situation at M. C. V. by adding an extra instructor, and offering some "trailer courses," or "catch up" courses each quarter which would not otherwise be given at that time. Such a plan will permit graduation of many irregulars one to three quarters earlier, without continuing the accelerated program.

Finally, we might mention that the much-discussed housing problem will not be entirely alleviated for many, many months to come. The student who spends weeks hunting a place to live is not getting the proper start in academic life, whether he is a new or former student.

The majority of the group here today are probably teachers. They hardly need to be reminded that their notes, manuals and other teaching materials are approximately of the

vintage of '41 or early '42 instead of '46. Unlike wine, theses do *not* improve with age. And do we need to tell anyone who has taught without a break since the fall of '41, and taught extra courses, too, that lately he gives a fair imitation of a mechanical robot in the classroom and laboratory?

Even if there were unassailable reasons for acceleration, the colleges would increase their own peculiar housing problems by doing so at this time. No one has yet found an efficient way to make a laboratory with 80 lockers take care of more than 80 students. Although we now temporarily can get two classes a year, are we being fair to our students if we overcrowd our facilities? And, of course, most of us lack the necessary staff to do such a job well.

2—*Student Opinions*: The civilian students have known nothing but the accelerated program for most or all of their college careers. Our scholarship records indicate that in most instances, the quality of work begins to deteriorate by the end of the sophomore year. (And many of the students realize this.) The summer vacation from formal college work would appear to be desirable for recharging the mental batteries and digesting the work already done no matter what the student's activity during this period. Another objection to accelerated programs of study which is a serious matter to most prospective employers is the lack of practical experience which is usually obtained during summers.

As previously noted, the veteran wants to make up for the lost time while he was in service. This is a natural desire. However, I have been impressed by the fact that this attitude is much less marked among many of these same veterans several months after their return. It is certain that in many instances their opinions of the ease of academic life away from the compulsions of the services have undergone some revision during this time. It would appear that we at M. C. V. will not have the same percentages of scholastic success among veterans as some institutions have reported in the press. Finally, it may be noted that a recent study at the University of Colorado showed that its World War I veterans in that College of Pharmacy did not make quite as good grades as the non-veterans, although the difference was not great (5).

3—*Public Sentiment*: As educational institutions, both pub-



lic and private, must depend on part or all of the people for their various forms of support, we cannot be entirely free from mass pressures. During the war, we were well-treated by a sympathetic public who felt that we were doing a patriotic duty under trying conditions and with little grumbling. Informal local surveys since V-J Day have convinced many of us that we have no pressure to face now from the general public.

Educators have recognized for a long time that emotions are not the best guides in solving teaching problems. Governor Dewey might consider this unrealistic politics, but few of those here will dispute its accuracy. It seems best, then, to avoid direct reference insofar as possible to the emotion-born hue and cry with respect to helping veterans finish their education promptly. As Lee (1) has said, "For the post war world, it is not so much a matter of an accelerated program as it is an improved one."

Only last week, Dr. Swain (6) devoted his column in *Drug Topics* to the question of "continuous" study programs in schools of pharmacy. His clear-cut presentation of this problem, which is only another name for the accelerated plan of study, is too fresh in your minds to need repetition here. Suffice it now to say that all have had ample warning of the dangers of the "continuous" program.

The Society for the Promotion of Engineering Education at a recent annual meeting, gave thought to the problem of acceleration, but decided there were other more pressing subjects to be considered. Walters (7) has summarized the heart of the discussion as follows: "Two problems stand out as of great importance. (1) devising more valid means than have been employed in the past for selecting and admitting students and insuring better preparations in secondary schools, and (2) building up faculties not only to the prewar level of effectiveness, but well above that level. Engineering education can never advance beyond the qualifications of its students and teachers. Hence, the engineering profession, industry, and the public who have a vital interest in its welfare should vigorously support every possible means of improving the quality of its personnel." The problems raised by the engineering educators are quite applicable to the field of pharmacy.

It is axiomatic that one can criticize only so long without furnishing a constructive suggestion unless he wants to be labelled a crank. I therefore venture to offer my personal solutions to the twin problems of acceleration and service to the veterans who wish to study pharmacy. Although some of these suggestions take us outside the direct implications of my assigned title, it would seem that the procedures suggested could be applied effectively with due credit to pharmacy, and without harm to pharmaceutical education. The conclusions follow:

1. Classes should be admitted only once a year, in the fall, except for a limited number of suitable transfer students who fit into places vacated by failures, illnesses and so forth. If this suggestion causes you concern regarding the pressures you may feel exist, remember, please, the psychology involved in making a thing seem hard to obtain.
2. Admission of able-bodied males direct from high school should be suspended for a year except in those cases in which previous commitments have been made. Many of these young men should shortly leave for military training and would merely take the places for a time of some veterans who could otherwise be accommodated. The admission of females should be limited to pre-war percentages, and even this number should not be admitted unless they rate excellent in character, scholarship, and personality. This policy, quietly pursued, need injure no one's feelings. We have a fine salestalk for the male applicant in the fact that a three year enlistment automatically assures his college training, and to the girls we may say we are already filled to overflowing with veterans.
3. This would appear to be the time to begin to improve our professionalism by strengthening our scholastic standards and eliminating some of the misfits at the source. Pharmacy also needs adequate aptitude-testing material. If we had this now, we could increase our percentage of successful students and save time and money for many people by refusing admission to some who are obviously unfit. Such a program would result eventually in an improved personnel throughout all phases of pharmacy.
4. Consideration should be given to some form of the "Nebraska Plan" or that in force at the University of Washington, *i.e.*, practical but real apprentice-like training during the college years. The work would form a very helpful and profitable summer experience, whether college credit was received or not. This suggestion, of course, precludes full acceleration as the term is generally understood.
5. Optional summer sessions might be offered to speed the graduation date of the very few who are able to rush the process without hurting the quality of their work, if the faculty is large

enough that all will have one or more quarters away from regular class duties each year. Any peacetime acceleration should be purely voluntary, and strictly reserved to the few who can derive full benefits therefrom.

6. One of the reasons we are pressed by some retail pharmacists to admit more and bigger classes is the poor distribution of registered pharmacists. A disproportionate number wish to stay in the cities and larger towns. It is therefore suggested that member schools and supporting organizations investigate means of remedying this situation. It seems likely that regional scholarships on an intra-state plan would be helpful in achieving this goal.
7. Finally, every effort should be made to get a maximum of explanatory publicity in the lay and professional press for any actions taken, particularly with regard to the veteran problem. Colleges must learn that an action properly understood by the public will bring no real harm to them no matter how unusual it may appear to be

Ladies and gentlemen, after four years of tossing on a stormy sea, the good ship "Pharmaceutical Education" has emerged from the clouds. There is sunshine, a good breeze, and a full sail. Are we good enough sailors to know the danger in trying to put out too much yardage, particularly with a short crew aboard?

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At a meeting of the International Health Conference in June in New York City plans were laid which contemplate the formation of a World Health Organization, which will be the general directing and coordinating authority in international health work. Its proposed functions will include promoting research in the health field; stimulating work to eradicate disease; assist governments to strengthen their national health services and to provide aid in emergencies; and to promote international standards in pharmaceutical, biological and related products. In fact, the organization will assist in any effort to improve health conditions throughout the world. The pharmaceutical aspect of the work was assured of a vigorous sponsor when President Truman appointed Robert P. Fischelis as one of the advisors of the American delegation.

Jose Mariano Macedo  
Peruvian Physician and Patriot\*

GEORGIANNA SIMMONS GITTINGER

School of Pharmacy, University of Maryland

In 1851 when the Faculty of Medicine of San Fernando presented diplomas, one recipient was José Mariano Macedo. It was a propitious time because the College of Medicine and Surgery of San Fernando, founded so auspiciously by Unanue and Tafur in 1808, had fallen on evil days and declined in prestige during the struggles to establish the Republic in Peru, after Independence. Now with the government firmly established, civil and educational progress were receiving new impetus.

José Mariano Macedo has a notable record in medicine though he acquired an even greater fame as an ethnographer of the prehispanic culture of the Viceroyalty of Peru.

The son of General Rufino Macedo and Doña Sebastiana Cazoria, both of old Peruvian stock and noble progenitors, he was born in Ayaviri, Peru in February 1823. After the usual early education of his class the young Mariano entered the College of Sciences at Cuzco in 1843, studying mathematics, the humanities and philosophy. There his brilliant record won for him a scholarship in the College of Independence at Lima in 1845, and he began the study of medicine. His detailed and orderly notebooks have preserved valuable records of the medical education of that period in Peru.

During his years of study Macedo got his practical experience as interne in 1846 and as resident in 1850 in the Military Hospital of San Bartolomé. This gave him a taste for army life and army medicine which he followed for nearly half a century.

Macedo's first professional years coincided with the appearance of serious epidemics in Lima. Beginning with epidemic gripe in 1851 the city suffered repeated recurrences of yellow fever through 1854. Macedo volunteered for service

\* The information in this article was obtained from "Vida y Obras de Jose Mariano Macedo" by Carlos Enrique Paz Soldán, An. Soc. Peru Hist. Med., Lima, 1945.

in the Isolation Hospital where his work recommended him to combat the same pestilence which later raged in Ancash in 1854. There he also made valuable notes on Andean Typhus, distinguishing between it and other forms and segregating it from yellow fever. He fought yellow fever again at Tacna in 1855.

As recognition for these services the government made Macedo Chief Surgeon of the Army in 1854, and also of the Military Hospital of San Bartolomé, which posts he held till 1862, when he was appointed Chief Physician of the Lima Panoptic, the model prison.

For a brief period this military surgeon assumed academic activities. He was appointed Professor of Descriptive Anatomy in 1856 and in 1857 transferred to Pathology in the University of Lima. But this relation with the Faculty of Medicine was severed in 1861. Why he left is still unknown, though surmises of disaffection on the part of other faculty members are probable.

Macedo took an active part in the founding and proceedings of the Medical Society of Lima and was an editor of the official organ the *Gaceta Medica de Lima*. This society lent itself to serious and near acrimonious debate on yellow fever in 1857, the discussions extending over three months. Macedo out of his experience in the Lazareto was unquestionably the best informed. His reasonable responses to challenge led one member to comment "if all would imitate the modesty of Dr. Macedo the Society would have memories of which it need not be ashamed."

Too many of the clinicians of the day were resistant to new ideas. Macedo applied the results of his observations and experiences, especially in epidemic diseases, and was criticized for deviations from the accepted theories. His spirit had so enlivened the Medical Society that it lapsed into inanition during his absence in Europe, and finally ceased between the years 1867 and 1874. Its renewal between 1874 and 1881 was partly due to him, though he took a much less active part than before.

It was about this time that this excellent military surgeon developed the interest which was to rival his medical career in importance. During his youth in Cuzco he had admired

private collections of "Peruvian antiquities" in which their owners had merely an artistic interest. Macedo came to realize their historic significance and began the study of sites where such buried treasure of the Inca empire might be found.

The doctor began his hobby with the purchase of a collection at Recuay consisting of objects of clay, gold, silver, copper, wood stone and textiles for which he paid 2000 silver sols. This was the signal for any and all venders of Incaic objects to seek Macedo's house. He spent the better part of his salary in such purchases, and displayed them in a large room of his home which he called Incaic Museum and opened to the public in 1876.

The renown of this collection spread, and visitors and collectors from Europe were attracted to it, seeking similar exhibits and giving him tempting offers of purchase.

Without lessening his professional activities, Macedo kept his Inca treasures as a relaxation in which he took enormous spiritual pleasure. But the mind of the trained scientist craved order and his next step was to classify his possessions. In doing this he developed a correspondence with archaeologists and ethnologists all over the world.

Then disaster came. Civil war and a change of regime imposed a ransom on Macedo to prevent destruction of his museum. To raise the needed funds he sold the whole collection to a foreign collector for 2000 pounds sterling. It was the finest collection that had ever existed in the hands of a single individual in Peru. His distress was acute, as he explained that the needs of his large family and the obligations of his profession necessitated it.

Macedo accompanied his treasurers to Europe exhibiting the "Peruvian antiquities" to appreciative groups in Paris, Vienna, London, Madrid, and finally leaving them in the Ethnographic Museum in Berlin, where they were installed in the "Sala Macedo", and acclaimed superior to any collection of South Americana in Europe.

Returning from his European tour to a more stable world in Lima, Macedo devoted himself to his medical career, though never relinquishing his ethnological interests. He was ready



at any time to help and advise the Americanists who came to explore.

Macedo was invited to join the founding of the Free Academy of Medicine in 1884. But due to the hostility of some of its members he did not rejoin the Faculty of Medicine of the University. It was through the Academy that he urged the study of tuberculosis as a sanitary problem, and stimulated activity in reform of sanitary services. At this time he became an enthusiastic member of the Peruvian Red Cross.

When cholera raged in Chile and Argentina in these years, Macedo was influential in enforcing the quarantine against Chilean ships. That Peru escaped this plague is due to the Academy and its most valued member. As an outcome of this in 1887 he was appointed to the Supreme Council of Health. In 1888 he was the official Peruvian delegate to the American Sanitary Congress which met in Lima. He took meticulous precautions for the health of the delegates. The Congress considered Macedo as a very great hygienist.

Just when he reached this peak came the beginning of decline. A diplopia warned him of danger and he went to Europe once more, partly to seek health, partly to sell the rest of his more valuable possessions, his books and art treasures, which conditions in Peru again threatened with dispersal. He even made plans for his funeral and for the division of his small property among his children.

On this his third and last trip to Europe Macedo continued his notebooks, recording his travels and studies as formerly. En route he viewed Guyaquil and Panama with the eyes of a hygienist. In London and Paris he revisited museums and sold his books. His health grew steadily worse, and soon after his return to Lima paralysis set in and immobilized him. He died August 17, 1894.

His individual writings include several on yellow fever, with which Macedo had extensive experience. He also wrote on angina, diphtheria, cardiac hypertrophy, cirrhosis of the liver, smallpox, verruga Peruza and cholera.

Of the 74 Macedo notebooks only a few are personal. The greater number contain records of his three trips to Europe in addition to his student records in Lima.

Macedo made his first trip to Europe in 1865 partly to divert his grief for his first wife whose death left him with five children. This time he went to Paris for study and further academic and professional contacts, remaining two years and visiting other parts of the continent during the summer vacations.

As has been noted, Macedo's second voyage in 1881 was for the purpose of selling his ethnological collections. His second wife remained at home with the children now increased to seven, only the oldest accompanying him. The notebooks of this period, in addition to records of travel and medical observations, are punctuated by outbursts of distress at the state of his war torn country. This time Macedo visited England and Scotland, returning in 1882 by way of Canada and the United States.

The third and last journey in 1888 was to seek relief from his illness and to sell his last treasures. He observed and took notes on the use of smallpox vaccine and brought back to his country a supply of it for public use. Macedo's notebooks of this trip also record courses and visits to Parisian clinics.

The more formal writings of Macedo include a report recommending the organization of a Military Sanitary Commission affiliated with the International Red Cross. In this he lists measures for quarantine, disinfection, isolation and anti-sepsis.

Macedo's most extensive writing was on yellow fever, for which he has left detailed reports and recommendations as to treatment. Outbreaks in Lima, in Tacna and in Callao are recorded. The most minute details of symptomatology and development of the infection relate to the epidemic in Lima. He describes its onset, the three stages of the fever, congestive, hemorrhagic, choleric and nervous forms and draws precise conclusions which are a clinical classic. Its value is all the more notable since at that time neither the virus nor the method of transmission by stegomyia were known.

This same wealth of detail Macedo applied to the thorough investigation and report on a mysterious epidemic in the interior at Huaraz in 1855. He deduces that it is a type of typhus, having pathological symptoms and lesions which indicate an indigenous variation which he calls Typhus of Huaraz.

His editorial in *El Monitor Medico*, October 1885, is an affirmation of the etiological unity of Oroya fever and verruga, which the medical martyr Daniel Carrión had demonstrated with his life. Macedo pays high tribute to the sacrifice of that devoted student.

José Mariano Macedo ranks high as among the first to appreciate the ethnological treasury of Peru and to exploit it. His correspondence with other archeologists and ethnographers gives detailed descriptions of his own collections of more than one thousand items, and he interprets their significance in pre-Columbian civilizations. Because he finds distinctive differences in some of these artifacts at different localities he assumes separate types of development.

These then are the writings he left: his very valuable notebooks of study and medical work at home and abroad, several reports on his epidemiological investigations on yellow fever, typhus, cholera and verruga, and his ethnographical records.

José Mariano Macedo epitomized his character and his ambitions for his family in a Credo which he wrote during a storm at sea on his way to Europe in 1881. Among its recommendations are that they maintain family unity and reciprocal protection; follow the religion of their fathers and respect the beliefs of others; study to extend their interests; hold work, honor and economy dear and abjure idleness, gambling and drunkenness; give careful study to each project and see it through; do not delay till tomorrow what can be done today; allot time thoughtfully and observe analytically. For personality guidance he advises them to subject passions to reason since carelessness may poison a whole life; to observe restraint in confiding the secrets of their lives to chance acquaintances; to study people who surround them, respect all to secure respect, and treat inferiors gently; preserve their dignity, never permitting it to be held in doubt, and guard honor as a precious jewel, since if it is once lost "you will be despised by society and an embarrassment to your family."

Macedo seems to have overlooked nothing in his Credo; he ends with advice on health and marriage: "accustom yourself to a cold bath daily, with hard scrubbing to keep the nerves in tone," and let your food be simple, nutritious and not highly seasoned." The man who has experienced financial reverses

counsels, "count your income before marrying" also that they should examine the parents of a proposed wife: "Virtuous and honored mothers train admirable daughters."

The final charge is his own motto, Direct your life for the honor of your God, your country, your family and your work." He had, like the Andes which surrounded his cradle, a zeal to reach the heights without losing a base set deep in the earth.

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### MARRIAGES

**Dr. Haakin Bang** associate professor of pharmacy and **Miss Lucille Dawner**, assistant professor of clothing and textiles, Washington State College, at Pullman, on June 10, 1946.

**Dean Edward C. Reif**, University of Pittsburgh, and **Thelma G. Carr**, on June 17, 1946.

**J. E. Kicher** and **Elizabeth Dillman**, Pittsburgh College of Pharmacy, on June 8, 1946.

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### NEW IN THE FAMILY

**James Louis** and **John David Kerr**.—Born May 6, 1946, twin sons of Mr. and Mrs. Wendle Kerr, College of Pharmacy, State University of Iowa.

**Gerald Allen Schwarting**.—Born June 18, 1946, son of Dr. and Mrs. Arthur E. Schwarting, College of Pharmacy, University of Nebraska.

**Russell Jay Jannke**.—Born April 26, 1946, son of Dr. and Mrs. Paul J. Jannke, College of Pharmacy, University of Nebraska.

**Norma Jean Pace**.—Born May 13, 1946, daughter of Dr. and Mrs. Donald M. Pace, College of Pharmacy, University of Nebraska.

**Brenda Lee Thayer**.—Daughter of Professor and Mrs. James R. Thayer, St. Louis College of Pharmacy and Allied Sciences.

**Janet Susan Jeskey**.—Daughter of Dr. and Mrs. (Margaret Schlichting) Harold Jeskey, Southern Methodist University, granddaughter of Dean and Mrs. Arthur F. Schlichting, St. Louis College of Pharmacy and Allied Sciences.

**George Francis Archambault, Jr.**—Born April 12, 1946, son of Mr. and Mrs. George F. Archambault, Massachusetts College of Pharmacy, and their fifth child.

**Charles Timothy Cyr**.—Born April 12, 1946, son of Mr. and Mrs. Gilman N. Cyr, Massachusetts College of Pharmacy.

**Marcia Elizabeth Lemon**.—Born May 30, 1946, daughter of Mr. and Mrs. James D. Lemon, granddaughter of Dean and Mrs. A. B. Lemon, University of Buffalo.

## Editorials

## Osteopathy and University Presidents\*

To the Signatories to the Petition to  
President Truman for the Deferment of  
College Science Students

Dear Sirs:

In the November 16th issue of "*Science*" appears a letter signed by you and seven other educators appealing to President Truman to alter certain current Selective Service practices. Although I am in hearty sympathy with the motives which undoubtedly prompted your action, I am, nevertheless, impelled to protest vigorously about one element in your statement which casts a serious shadow over the entire document.

In the second paragraph you mention, as deserving deferment, students of "osteopathy" in the same general category with students in such recognized disciplines as medicine, dentistry, pharmacy and engineering. To do so stultifies the entire argument because no American university recognizes osteopathy as a scientifically based healing art, and there is no reason to believe that the biological science faculties of the institutions you represent consider the system of osteopathy to be other than a fraud upon a gullible public. The stupidity or cupidity of some Selective Service official in originally classing students of osteopathy with the other's you have listed in granting deferment several years ago is not an adequate excuse for responsible officials of respectable institutions of learning to compound the error now. When university and college heads plead for special consideration for students in the various cults of this type our academic standards and ethics have fallen to a new low. Since when has expediency superseded principle in academic practice? And since when have the institutions you represent and administer given their academic blessing to medical cultism? If those universities, including California, Cincinnati, Cornell, New York University, Vanderbilt and Yale among others intend to promote osteopathy it is certainly time for American medi-

\* Reprinted from the December 28, 1945 number of *Science*. Vol. 102, No. 2661. See Dr. Visscher's letter and Editors' comments in this issue.

cal and other biological scientists to take stock of their position.

Actually I am confident that the unfortunate implications of the naming of osteopathic students in this way were not apparent to most of you. Nevertheless, the seriousness of its occurrence, even by inadvertence if such it was, can not be over-emphasized in a world in which the layman looks to science for miracles and can not distinguish between scientific fancy and fact because of an inadequacy of background information which, right or wrong, he looks to persons like yourselves to possess and use.

Maurice B. Visscher

Department of Physiology,  
University of Minnesota

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## Biological Chemistry, a Basic Pharmaceutical Science

Teachers of pharmacy have recognized for many years the place of the preclinical medical sciences in the pharmaceutical curriculum. Bacteriology, physiology, and more recently experimental pharmacology have thus been made required subjects in the Pharmaceutical Syllabus and rightly so. It is argued that the student must be familiar with the basic sciences on which medical practice rests, if he is to meet intelligently the physician at his own professional level. The advances of today in the field of sulfa drugs, antibiotics, and many other drugs have made it even more important that the student should have competent knowledge of these subjects and their applications.

Biological or physiological chemistry has not fared so well in the hands of those responsible for the education of the pharmacy student. It is still an optional subject in the Pharmaceutical Syllabus. A survey of the curricula of our colleges of pharmacy will show a wide variation in the courses in this subject which are available to students of pharmacy. If a school is a part of a university in which cooperation between units is emphasized the pharmacy student may have



available or may even be required to enroll in the course in biological chemistry, which is a part of the required curriculum for medical students. Since the training of the pharmacy student includes in most cases at least as much chemistry and physics as does that of the medical student, such a course should present little difficulty, granting that the natural abilities of both groups of students are the same. Both groups profit by such contacts. On the other hand, in some schools in which opportunities for instruction by teachers in faculties outside of pharmacy are lacking, the course in biological chemistry is merely a "bread and butter" course, unworthy of the name of biological chemistry. After a few qualitative experiments, the student is taught the technic of simple urine analysis, and in some instances, blood counting and blood analysis. This is done under what the writer believes to be an entirely false belief that the student thus trained will be competent to run a clinical laboratory, to make such tests for physicians. With the development of schools for training laboratory technicians, with the better control of hospital laboratories the American Society of Clinical Pathologists through its Registry has demanded the use of well trained individuals for such work. Such elementary and almost purely utilitarian courses in biological chemistry are outmoded.

No one will deny that, as the science of the chemistry of the living organism, biological chemistry is fundamental for the other preclinical medical sciences. As bacteriology, physiology, and pharmacology have become less purely descriptive and as more emphasis is placed on the dynamic aspects of these subjects, the importance of a knowledge of the chemistry of the living cell has become more apparent. The approaches to the study of many of the newer drugs are essentially biochemical; maintenance of blood levels to insure the desired therapeutic effects, rates of excretion, mechanism of detoxication, antagonisms, all of these rest on knowledge of normal chemical reactions of the body. We must remember that chemistry entered the medical field as a branch of physiology; in the English schools the subject is still taught as chemical physiology. Surely the pharmacist can not appreciate the modern developments of serum therapy, antibodies, and the like without a comprehensive knowledge of the normal chemistry of the blood. How can he intelligently inform the physician or customer concerning vitamin problems if he has no knowledge of the development of the vitamin hypothesis, its

trends and dangers? It is unnecessary to cite other detailed examples.

The main argument against the inclusion of a course in biological chemistry as a required subject has been the lack of available time in the present four year curriculum. It is argued that, in such a curriculum, emphasis should be placed on those subjects which are "practical"; that we are training chiefly men who will enter the field of commercial pharmacy and who do not need more scientific background than is now available. The same arguments may be made against the inclusion of laboratory instruction in pharmacology and physiology. We may well pause and consider carefully the need for and the type of instruction in the fundamental chemistry of the living organism in the curriculum of the student who is to be concerned with recent developments in pharmacy and the related health sciences.

Howard B. Lewis  
University of Michigan

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## Drug Dispensaries

Pharmacists and pharmacy students being currently graduated by our colleges are passing up a grand opportunity when they do not consider the possibilities of purely drug dispensaries. I prefer to call them drug dispensaries rather than prescription shops, because they come to be more than that to a community.

The public is thrilled with the idea of drugs to relieve their ills being prepared and dispensed for them by men who know drugs. The age of packaged or patent medicine is rapidly drawing to a close. Radio advertising and "medicine show ballyho" has made this come to pass.

When you are asked to recommend medication for a cold, I do not believe that it can be considered "prescribing" to put up drugs from a prescription room. To me, it is far better for the customer, for the doctor, and for you as a pharmacist to dispense drugs you know, than to recommend someone's patent remedy, and you are surely going to do one or the other. The public is very eager for this type of drug

service because they feel they get better medication and certainly it is more professional. Because of this, drug dispensaries are not dependent entirely on prescriptions written by physicians.

The American physician is definitely sold on the idea of drug dispensaries, because he knows that the pharmacist's business is drugs, and his entire time and effort is spent in a profession allied to his.

The sale of notions that are sold in a modern drug store certainly does not lend itself to the standards of modern medicine and the atmosphere which the modern American physician is demanding of his own profession.

Pharmacists, fresh from college, I am sure, have no idea of the potential possibilities in this kind of pharmacy. We have all been held down by the tradition of the drug store as a place for all types of services.

We live in an age which demands specialization and specialists. In a drug dispensary, you set yourself up as a specialist, not only to the public, but to the physician as well.

The pharmaceutical houses have chosen a course of ethical pharmaceutical practice and sales and in the last ten years have experienced great prosperity. Why not follow this clue? One cannot be more than a merchant if he insists upon being in the general merchandising business instead of being a pharmacist.

Four years of pharmaceutical training did not prepare you to sell patent remedies and general merchandise, had they done so, you probably would have been taught the language of the old medicine man, who followed the carnivals.

In a pharmaceutical dispensary one need not fear competition. It is an institution that has no competition.

Theo. H. McCosh  
Gering, Nebraska

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Professor R. H. Pauley, Dean of the College of Pharmacy of the American University of Beirut, Lebanon, expects to spend the coming year on sabbatical leave in the United States. His family will accompany him and the home address will be -342 South Third Avenue, Walla Walla, Washington.

## The President's Page

### The Value of Association Meetings

The value of attending association and professional meetings is often questioned, particularly by young men. It is easy to understand how one who does not have a part in a program, who does not know the history and mechanism of an organization, and who does not have a part in it as a member of a committee or some office may feel lost at the first few meetings, but there are hidden values which become apparent as one attends the meetings year after year. Even though content of the formal reports or the prepared papers on a program are not of particular interest to an individual, nevertheless, there are great values to be derived from attendance at an annual convention. These values can best be summed up in the phrase, "Knowing and becoming known to men and coworkers". Some whom we have placed on pedestals are lowered to the common level when we see them, hear them, and observe their actions. Others whom we have never known or seen rise in stature and esteem as we get to know them.

The criticism is often heard that the same old gang runs an organization; that there are too many interlocking directorates; that some men have all the places on the committees; that there should be a greater diversification of representation; and that young men should be given a chance. How can these ends be attained unless young men become known and through their work merit appointment to committees or election to positions. Many of those overburdened with an excessive number of committee jobs would be glad to relinquish a number of them if someone could be found to do the work in a competent manner. The officers of organizations are hard put to it to find men to fill the various appointments and find it necessary to fall back on those who will do a good job as proven by past performance. There are those who seek appointments and positions, but once they get the job do nothing about it.

Every young man in a profession or scientific field should set aside a portion of his income for self improvement and the largest part of this income so set aside should be devoted

to attendance at professional and scientific meetings. The writer has always advised young men to join various associations, among them, first, the state association of pharmacy, because the professional association must function well at the state level if the profession is to thrive within any single commonwealth. Secondly, he should hold membership in the American Pharmaceutical Association, for it represents the united effort of our profession to move on a national and international basis in the public health fields, and it is the organization which prevents our efforts on a statewide basis from becoming provincial. Thirdly, he should be a member of the American Association for the Advancement of Science, which unites all professional men and scientists in providing and disseminating scientific knowledge for world betterment. Fourthly, he should be a member of an organization pertaining to his special field of science. If he is a hospital pharmacist, then he should belong to the American Society of Hospital Pharmacists. If he is a pharmaceutical chemist, he should belong to and attend meetings of the American Chemical Society. If he is a pharmacologist, then he should join the Society of Pharmacologists, and so on, thus bringing recognition to pharmacy and becoming known as a specialist in his own field and to those in areas closely related to pharmacy. Thus the whole of pharmacy would benefit and the individual would bring prestige and wide acquaintance to himself and would bring back information from these other areas to pharmacy.

There are other values in attending association meetings regularly. The meeting of former friends, the growing list of acquaintances, new ideas that can be brought back to one's personal work, the broadening influences of travel, and the many benefits of playing and enjoying work with other men. One of the great values often obscured is that we have an opportunity to express our own ideas, to mold the direction of organizations which we think are wrong according to the right paths, and to have our erroneous ideas corrected. False critics of things as they are usually are men who have made their voices heard only in their own home community.

Our scientific and professional organizations have suffered great loss during the war period because it has been impossible to hold annual and regular meetings. It is important, therefore, that our teachers in pharmacy, our scientists in



pharmacy, and all others come to the annual meeting this year to renew old friendships and make new ones, to get new ideas, to lay the foundation for solving the many problems that lay ahead. If these are not reasons enough, then one should come out of purely selfish motives; namely, to become known so that future opportunities may present themselves.

Glenn L. Jenkins

Announcement has just been made by the University of Connecticut of eighteen awards of scholarships for students at the College of Pharmacy in New Haven. Twelve of these awards will go to students in the entering class next September, and the remainder to students in the sophomore class, all of whom were scholarship winners in their freshman year.

The University of Florida has a number of scholarship and graduate assistantships available. For information address the Director of the School of Pharmacy at Gainesville.

The University of Illinois College of Pharmacy announces that there are still available positions as instructors or graduate assistantships in chemistry, pharmacognosy, physics, pharmacy, mathematics, English and internships in hospital pharmacy. For information address the Dean at Chicago.

#### PHARMACY SCHOLARSHIP ESTABLISHED AT UNIVERSITY OF MICHIGAN

A \$2,000 scholarship to encourage study of pharmacy as a profession was established Saturday by J. M. Noble and T. Waldo Blackmer, proprietors of the Chemist Shop, 253 W. Michigan Avenue.

Letters announcing the scholarship have gone out to high schools in Jackson and in 14 other high schools in this area.

Worthy students of either sex, who are interested in completing a four-year course in pharmacy are eligible. The first year of study must be taken in Jackson Junior college and the subsequent three years in the University of Michigan. The scholarship is available to high school seniors or recent high school graduates qualified to enter the pharmacy college for the fall semester and who intend to make a career of pharmacy, research in pharmacy or pharmaceutical chemistry.

The recipient will be chosen by a scholarship board of trustees, consisting of Noble, Blackmer, Dr. Howard B. Lewis of the College of Pharmacy, University of Michigan, Dean W. N. Atkinson, of Jackson Junior college, and D. C. Haefner, trust officer of the National Bank of Jackson. Selection will be made on the basis of interest in pharmacy, scholastic ability and effort and need for assistance.

Under terms of the grant, \$140, will be paid at the beginning of the first and second semesters, \$250, at the opening of the next four semesters and \$360, at the start of the seventh and eighth terms.



## The Editor's Page

In the December 28, 1945 issue of *Science* appeared a letter written by Dr. Maurice B. Visscher of the department of physiology of the University of Minnesota. *Science* gave the letter the title—"Osteopathy and University Presidents." The letter is reproduced by permission in this issue of the *Journal*. The letter is self explanatory. Dr. Visscher objected to an appeal by a number of university presidents, made to President Truman to alter certain selective service practices concerning the deferment of professional and scientific students. The list included students of osteopathy along with medicine, dentistry, pharmacy and engineering. I never read that list without expressing mental resentment at the inclusion of osteopathy. Many others had the same experience but only Dr. Visscher has had the courage to come out and remonstrate. I suppose the politicians would like to include all the medical cults—why stop with one, when votes are needed? But university presidents ought to know and do better. Fortunately pharmacy is not infested by a lot of cults and we are in position to come out and stand for what is right. Dr. Visscher's letter to me, which appears on another page, is proof that there are a lot of physiologists that ought to come out and stand for something too. A scientist who in any way condones medical cultism is comparable to the senator who says one thing in the senate chamber and does another in the cloak room. Such men retard scientific progress. We commend Dr. Visscher for his effort, for his courage and assure him pharmaceutical educators and pharmaceutical practitioners approve of his stand and will give him the support which he so richly deserves.

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From time to time, on these pages, there has been recorded the progress pharmaceutical education and practice has made since the turn of the century. That progress is one of the most spectacular educational accomplishments of the period and the facts require no restatement here. During the larger part of the last four decades the American Association of Colleges of Pharmacy, through its officers and committees, has made an effort to have some foundation make a nationwide study and survey of pharmaceutical education and its needs. This effort never came to fruition. In the middle

twenties, Dr. W. W. Charters, with financial aid from the Commonwealth fund, made a functional study of the pharmacist. The results of that study were embodied in a report known as "Basic Material for a Pharmaceutical Curriculum." This report has had a profound influence upon our thinking and on curriculum building. It cinched the four year curriculum in pharmacy for all time. Any future survey or study will undoubtedly show that the Charters study produced facts that were basic and will stand the test of time. We shall forever be grateful to Dr. Charters for the contribution he made to pharmaceutical education and the influence this contribution made upon pharmaceutical practice.

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When on May 9, from Washington, the American Council on Education made the announcement that it was undertaking a country-wide survey of pharmaceutical education, it meant the rewarding of a great group of earnest men who had worked through many years to bring this about and it means the dawn of a new day for pharmaceutical education.

The purpose of the survey is set forth in this issue of the *Journal* by Dr. Elliott himself, under the title, "A Survey of Pharmaceutical Education in the United States". However, Dr. Elliott, characteristically, put it in a nutshell when he said in speaking of the purposes and plans of the Survey. "It will be the primary aim of this enterprise to promote the advancement of the important profession of pharmacy. Today every prescription counter has become a key control station for individual and community health."

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If you would know better the qualifications of Edward Charles Elliott, (in Nebraska he is just plain "Ed Elliott") for the directorship of the Survey you should read the record of his accomplishments in the last edition of *Who's Who*. In university administration, in the conduct of investigations, as advisor and counsellor to many organizations, governmental and educational agencies and to institutions from his home town to the Philippines, as an officer in educational and scholarly societies and as an author, in his own field, few men are his equal. The only mistake he has ever made in his life that is on record is the fact that he was born in Chicago.

This handicap was overcome by obtaining his first two degrees in Arts and Science at the University of Nebraska. While here, it is interesting to note, he did his major work in the very building in which these lines are being penned. In addition to his attainments in general education he is especially qualified to conduct a pharmaceutical survey because as president of the University of Montana and later, of Purdue, and as Chief of the Division of Professional and Technical Training of the War Man Power Commission he has had an intimate contact with pharmacy and its needs. The magnificent new pharmacy building on the Purdue campus is material evidence of his sympathy and interest. In another way he is wise. I cannot find that since 1932 he has laid any claims to being a Republican. He is one of the few men that I have known that has gained distinction without having become a Presbyterian. However, I am convinced that some place along the way he came under the sublime influences and was vitalized by the Calvinistic doctrine. I have heard him say that to be a successful university president one must have a cast iron stomach and be quick on the trigger. That he has, and is, especially the quickness on the trigger and in the characteristic western way which means "no fooling". You may be asked to fill out questionnaires until you are weary and you may be asked to do a lot of things that you can't see the reason for but we should remember Ed Elliott knows his business and he expects the same quickness on the trigger from us that he himself has. The success of the Survey will depend in a large measure upto the cooperation we give the Director.

When I sent him a complete set of our Journal for use in his office and offered him the use of its pages for any use he might make of them in the Survey he wrote:

"You may be assured that the set of 'The American Journal of Pharmaceutical Education' is in constant use. It has become our *Vade mecum*. You stand at the head of the list of those who will receive any material prepared regarding the Pharmaceutical Survey. I am gratified to know that you are planning to give some space to the Survey in your July issue." The Pharmaceutical Survey could not be in better hands. Its fruitfulness is assured.

The personnel of the Committee on the Pharmaceutical Survey is given on another page. A perusal of that list of names is most gratifying. They represent practically every field of pharmaceutical endeavor and fields with which pharmacy is related. We are especially grateful that Dr. W. W. Charters was named chairman of the committee. That means no lost time, an efficient service and a delightful experience for those permitted to work with him. As I observe from the side lines this whole Pharmaceutical Survey set up, I am reminded of the fact that when I was a very ordinary student of the classics in my undergraduate days I discounted the sincerity of the ancient Greeks in their belief that their gods meddled with the affairs of men. But when I look at the perfect set up of the Pharmaceutical Survey I am convinced that the Creator of us all must have had a hand in the plan. I like to believe that there is a divine plan in the lives of men. You know, we Presbyterians think that way. The many young men who have from time to time raised the question as to the kind of a future pharmacy has in store for them, can rest assured that the Pharmaceutical Survey will point the way to greater opportunity and usefulness in every field of pharmaceutical endeavor.

Finally I want to say that the major credit for making the Pharmaceutical Survey a reality should go to the far seeing men of the American Foundation for Pharmaceutical Education who have constantly sought ways of spending the Foundation's money in order to best promote pharmaceutical education and research. Their financial support has made the Survey possible. It would be difficult to find a more fruitful way of investing their money. And when we go back of the Foundation, the major credit for its birth should go to Ernest Little who thought and lived and prayed and worked for the plan until the Foundation became a reality.

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As the time for the annual pharmaceutical pilgrimage draws near the editor's desk becomes the repository of many tentative reports of the standing and special committees of the association. It is impossible even to present the substance of these reports although they are thought provocative and would prepare us for discussions at the annual meeting. The editor has frequently felt that if it were possible to obtain them on time it would be wise to publish all

committee reports before the annual meeting. Then we would be prepared for intelligent discussion. It is to be hoped that at the Pittsburgh meeting time will be given to discuss the problems that the reports present. What is the use of presenting reports unless there is time to exchange points of view. We might as well stay at home and read the reports in the October Journal. A meeting should have some other objective than getting through with the program on schedule. Never in its history has the Association been so pregnant with problems as it is today. At the Pittsburgh meeting there should be some successful deliveries.

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Never in my day can I recall a year when there has been such a long list of retirements, as the present one. Some of these days, in the near future, if my memory does not fail and my pen does not falter, I hope to write the story of the contributions these men have made in raising the level of pharmaceutical education and practice. As for myself it would seem improper if I did not express a word of appreciation through the Journal for the hundreds of telegrams and letters which have come to me at the end of my active administrative life. It has been a great life and I do not have the words to express my gratitude to you all, and I am sure I voice the feeling of every other person who has at last found freedom from administrative duties which includes the necessity of meeting 8:00 classes on time, and the endless untangling of student schedules.

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In this issue, I am doing something very unusual. I am printing on another page a very personal letter from a very dear friend. It is the last letter he wrote to me. On the fourth day after he wrote it, John Grover Beard died. I have tried to write something for these pages worthy of the life of this good man. Words fail me. Finally I realized that nothing I could say would be as fine a tribute to him as the lines of this letter which he wrote on the occasion of my retirement from active administrative duties. Read it with that in mind. The lines reveal those characteristics of the soul of John Grover Beard which made him great and one of the most beloved men in American Pharmacy.

Rufus A. Lyman

## Gleanings from the Editor's Mail

Dr. Rufus A. Lyman  
The American Journal of Pharmaceutical Education  
202 College of Pharmacy  
University of Nebraska  
Lincoln, Nebraska

Dear Dr. Lyman:

I appreciate your praise for the "Osteopathy and University Presidents" more than you may surmise because most of the mail I have got about it has berated me as an intolerant bigot. Even some physiologists have, to my amazement, called me on the carpet. It all goes to show how the poison of propaganda permeates everything and nearly everybody.

Of course, you have my permission to reprint the article. I shall be happy to see it get wider circulation in your journal.

University of Minnesota  
April 4, 1946

Sincerely yours,  
MAURICE B. VISSCHER

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I may say this in regard to my experience with veterans—at least ninety per cent of those I have had contact with are students of a high order and of such quality that they will make desirable members of the profession.

ROBERT C. WILSON

University of Georgia  
July 8, 1946

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Relative to the demand for enrollments in colleges of pharmacy beyond the capacities of the colleges to meet, I have been asked: "Is this the time to limit enrollment, and if so shall it be done on the scholarship basis or by adding a prepharmacy year to the graduation or degree requirement?" Without hesitation I reply: "Limit enrollment and do so by adding a prepharmacy academic year. This would advance graduation standards to five years, an advancement that should have been made long ago by pharmacy and which is the standard minimum requirement of other professions, even of nursing, whose practices are less and certainly not more responsible than the practice of pharmacy. I have been working through a long lifetime for the five year standard, and so have a very few others. The rank and file of our educators have been too modest and reticent. The present situation is their opportunity to assert themselves and to approve and demand the advancement. This opportunity should be welcomed and capitalized.



The advancement would undoubtedly attract matriculants of a superior quality, as other earlier advancements have attracted students who regarded the former lower requirements as below the standards they approve. That has been the experience after every advancement at the University of Minnesota. There is a strong probability too that graduates of a five year course would not find the functional activities of so-called drug stores of today attractive and so would lend their support to the more professional development.

FREDERICK J. WULLING

Excelsior, Minnesota  
July 6, 1946

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I have your recent letter relative to the limiting of enrollments in our schools of pharmacy. I do not have all of the facts at hand concerning shortages of registered pharmacists, or the present enrollments of students in our college of pharmacy. However, I am of the opinion that if limitations alone are desirable, that they should be upon the basis of one or two years of pre-pharmaceutical studies. This seems to be the method of progress of the other allied medical sciences. If salaries comparable to those in the other professions are to be maintained in pharmacy, better and broader trained personnel in the pharmaceutical sciences will be necessary in the future. I believe higher educational qualifications will lead to fewer pharmacists with higher remuneration and greater benefits to the public through cooperation with the other health agencies. It also occurs to me that there should be a limit placed upon the number of the students admitted to schools of pharmacy in relation to the number of instructors; the necessary equipment and suitable rooms needed for instructional work in order to maintain standards.

C. E. MOLLET

University of Montana  
July 10, 1946

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With regard to the large enrollments with which the colleges of pharmacy of the country are confronted, I believe it is their first duty to meet the present emergency which exists because of the serious shortage of well-qualified pharmacists. It would appear, accordingly, that the colleges should permit a marked increase in enrollment, but that the students should be very carefully selected. This should be done on the basis of scholarship and other qualifications, in order to maintain and improve the standard of those entering the profession. However, due to many advances in all fields of science which find application in pharmacy, and the fact that pharmacists should have as broad and sound a preparation as possible, the need for requiring a period of one, or perhaps two, years of pre-pharmacy training should always be kept in mind. Undoubtedly, it is not advisable to lengthen at this time the period of training required for a degree in pharmacy, but that objective should not be lost sight of.

As I have indicated earlier, my interest in pharmacy continues, and I endeavor to follow rather closely current pharmaceutical literature. With all good wishes,

EDWARD H. KRAUS

University of Michigan  
July 18, 1946

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In answer to your letter of June 29th, I submit the following comments relating to curtailment of enrollment in colleges of pharmacy.

In the first place we should remember that universal education has made our nation great. We should not go backward and resort to education of only the few. Such a course would spell ruin to our country.

It is true that the pharmacy curriculum prepared its graduates for specialized duties, but, if we have the right kind of teachers, it can also prepare young men and women for good citizenship which in the long run is of equal importance to specialized duties.

I believe that it is the duty of the state to give each boy and girl all the education he or she can assimilate. The state will profit by such a plan. Why worry whether a pharmacy graduate works in a drug store or not. He or she can use pharmacy training as a farmer, a housewife or in many other types of employment. Many of our graduates do not follow pharmacy as a life work but they are good citizens and all advise me that they use their pharmacy training.

I was one of the first to urge a four year curriculum for the pharmacy college. Such a period of study was needed not only to adequately prepare the student for his specialized duties but also to give him a broader view of his duties as a member of his community. The four year course of study also gave the college of pharmacy equal standing with other four year curricula on the campus. After many years of close study of the duties of the retail pharmacists I have come to believe that the four year curriculum meets all demands and that, for the retail pharmacist, a fifth or sixth year is not needed. It is true that more contact with university life should broaden the student's outlook but it is not necessary for his specialized duties. He should, however, have been inspired by his teachers to continue to read and study throughout his life time. No one should quit learning.

Universities and colleges are for the moment being overcrowded with students. Less than four years ago, however, we were urged to shorten our courses so as to graduate more pharmacists. In a few years I believe we will return to normal conditions. A college or university, however, can take only as many students as can be cared for by the physical plant and by the teaching staff. It has been determined at the University of Washington that no more than fourteen thousand students can be cared for by the physical plant. Money is not available to enlarge the plant at the present moment hence it is found necessary to limit enrollment by raising the entrance grade

point average from 2 to that of 2.5. Veteran organizations are objecting; but as yet no change has been made in the regulation.

Another thought should be kept in mind and that is graduate work. A student can enter an arts and science college and earn a bachelor's degree in four years. He can then enter the graduate school and in normal time earn the M. S. and Ph. D. degrees. Will he enter pharmacy for five or six years of study for the bachelor's degree and then take graduate work? My answer is no and that a lengthened curriculum will ruin graduate work.

I would therefore offer the following suggestions:—

1. Each college of pharmacy should be allowed to limit its enrollment according to its facilities to properly care for its students. Possibly the raising of the educational standard for entrance is the fairest policy to follow but that should be left to the individual college to determine. I am opposed to making rules that all from Maine to California must follow especially when we know that conditions differ in different parts of the country.
2. I would not lengthen the curriculum for in my opinion that would ruin graduate work. Graduate work needs to be done in the fields of Practical Pharmacy, Pharmacognosy, Pharmacology and Pharmaceutical Chemistry. Manufacturing pharmacy should be able to find its scientific help in graduates coming from universities where graduate work in the above fields can be done. Our teachers in the above fields should also be trained by graduate study. This division of work therefore should be encouraged, not retarded or ruined. Don't lengthen the undergraduate course of study.

CHARLES W. JOHNSON

University of Washington  
July 5, 1946

NATIONAL SYNDICATE OF PHARMACISTS  
SOCIEDAD FARMACEUTICA LUSITANA  
(SINDICATO NACIONAL DOS FARMACEUTICOS)  
Rua Sociedade Farmaceutica, 18  
Lisboa, Portugal

Eminent Mr. Director of "American Journal of Pharmaceutical Education"

Lincoln, Nebraska

U. S. A.

Eminent Sir:

We would like to establish an exchange of "Jornal dos Farmaceuticos"—organ of this National Syndicate—with the periodical which you distinctively direct, procuring as well, closer relations of mutual usefulness between similar publications.

With this in mind we take pleasure in sending you the numbers of the above journal published in the years 1945-46, hoping for a regular exchange of our periodicals in the future.

With our finest compliments, we subscribe ourselves,

Doctor Aluisio Marques Leal  
Secretary

## Notes and News

**University of Buffalo, School of Pharmacy**—The one-hundredth annual commencement of the University of Buffalo was held on June 4. Five students were given the bachelor's degree in pharmacy. Joseph Lipson was graduated with "summa cum laude" and received the Lehn and Fink medal, the Academy of Pharmacy Prize and the Rho Pi Phi key. Penelope Mountfort was graduated "magna cum laude" and received the New York State Pharmaceutical Association prize and the Merck Award.—As a part of the centennial celebration the school of pharmacy gave a spring clinic and refresher course on April 23 and 24. The chief speaker of the occasion was Dr. George D. Beal of the Mellon Institute who spoke on the subject of "A Century of Scientific Progress."

**University of Colorado, College of Pharmacy**—Professor Charles F. Poe, after having served over five years as Colonel in the Quartermaster Corps of the army, in Africa, Sicily, France, and Germany, has returned to the department of chemistry.—Charles Bloomquist who has been an assistant in pharmacy for two years will enter the Colorado School of Medicine in September.—Edward Christensen, a 1943 graduate, has been appointed as an instructor in pharmacy for the summer session.—Clark A. Kelly received the Lehn and Fink medal and one of the Merck awards for scholarship the last year. Edna Vinci received the other Merck award and Marjorie Grove was given the Iota Sigma Pi scholarship.—Both fellowships and scholarships are available for students wishing to carry on graduate study. For details address the Dean of the Graduate School.

**Columbia University, College of Pharmacy**—Dr. Clement Lee Huyck has been appointed professor of pharmacy to succeed professor Curt P. Wimmer who has retired.—The Bigelow Fellowship is now available. Applicants must have not less than a B average. The appointment may be renewed annually but not to exceed three years. For information, address Dean C. W. Ballard.

**University of Connecticut, College of Pharmacy**—D. Max Galinsky won the Lehn and Fink medal for the highest general average for the four years. He was also granted a diploma "with high honors". Other students who won prizes or honorable mention for excellence in scholarship were Jerome Wilson, Mildred Schilling, Shirley Bennett, Lucille Kiermont, Stanley Spack, Margaret Adams, James Roach, and Herbert Sable.—Chester Potrepka, assistant instructor in chemistry since 1939, has resigned to become co-owner of the Plantsville Pharmacy in Plantsville. He will be associated in business with his brother, Frank Potrepka, who was formerly assistant in chemistry at the college, a member of the faculty of Creighton University and more recently engaged in the research laboratories of the Wintrop Chemical company.—Nicholas W. Fenney, assistant professor of pharmacy, received the degree of Master of Public Health from Yale University in June.—A freshman class of thirty-seven veterans that entered the college in January is

continuing its courses throughout the summer in order to enter the sophomore class in September.

**Ferris Institute College of Pharmacy**—Paula V. Moore received the Merck award as the outstanding student of 1946 and Richard Coward was given the Dean's award for high scholastic record throughout the four years of his course. The city of Big Rapids has set up sanitation and utility units at the Riverside park for those students living in house trailers.—The enrollment reached 140 for this summer term.

**University of Florida, School of Pharmacy**—James B. Henrix was awarded the Attwood Leadership prize and also the D. W. Ramsaur Gold Medal for his high scholastic average.—Florida May Carlson has been initiated as a member of Rho Chi.—Dr. Paul A. Mattis has been elected to membership in the Florida Chapter of Sigma Xi.—Director P. A. Foote spoke before a recent meeting of District No. 3, at Birmingham and the annual convention of the Florida State Pharmaceutical Association at Miami. He discussed the Bureau of Professional Relations.—A minor change has been made in the curriculum whereby the course in physiology will precede that in pharmacology instead of being taught the same semester.

**Fordham University, College of Pharmacy**—Fourteen seniors were graduated at the June Commencement. Lucile Anna Intercia, "cum laude," was the recipient of prizes for having done the most for her class and for the highest average in all subjects. Sister Mary Capistran was awarded prizes for the highest average in pharmacy and Albert A. Simon received the prize for the highest average in practical pharmacy. Vincent A. Jay was recognized for exceptional ability in all subjects and George A. Sampagna, for having made the most progress in his course.—New members of the staff are: Edward J. Home-nick in pharmacy and materia medica; Dominic A. Salimando in chemistry; Mrs. Grace James and Edward J. Kennedy in the registrars office.—Dr. John L. Dandreaux, 1923, dean of St. John's College of Pharmacy addressed the students of Fordham recently on "The Challenge Facing Pharmacy."

**University of Georgia, School of Pharmacy**—The American Foundation for Pharmaceutical Education made W. R. Byrum, assistant professor of pharmacy, the recipient of an adequate scholarship for the completion of his requirements for the Ph. D. degree at Ohio State University. Mr. Byrum left at the end of the spring quarter to do this work.—Dr. W. T. Sumerford was made acting dean in September, 1945, upon the retirement of Dean R. C. Wilson.—Dean Wilson was on the advisory committee of the state board of health and chairman of the special committee to revise pharmacy laws.—The enrollment doubled the second semester and is expected to increase even more during the summer. The majority of the students are veterans.—A student branch of the American Pharmaceutical Association was organized at the university, and its membership is steadily increasing. The students are showing a great interest in the affairs of the branch, and participate in its activities. Dr. R. P. Fischelis presented the charter to the A. Ph. A. members at the annual banquet in April.—We have

had several distinguished visitors throughout the year including Dr. R. P. Fischelis, Secretary of A. Ph. A., Dean B. V. Christensen of the College of Pharmacy of Ohio State University, Dean Lombard Kelly of the University of Georgia School of Medicine, Dean Leon Richards of Howard College, Drs. Y. Subba Row and Raymond Cunningham of the Lederle Laboratories.—Plans are underway to increase the amount of laboratory work in the courses in pharmacology. This will be made possible through cooperation with the department of biology.—The Lederle Laboratories, Inc. awarded a \$3000 scholarship for work in the synthesis of choral derivatives. The American Foundation for Pharmaceutical Education has donated six-hundred dollars to be used in helping worthy students. Two students have received help from this fund.

**The George Washington University, School of Pharmacy**—Former Dean of the school of pharmacy, W. Paul Briggs, who is now Director of Pharmacy Services of the Veterans Administration, has been appointed as adjunct professor of pharmacy for the coming year.—Miss Jane Gass, 1944, who received the Master of Science degree in pharmacology from Purdue University in June, has been appointed instructor in pharmacology and pharmacognosy.

**State University of Iowa, College of Pharmacy**—Irwin J. Lage in charge of the manufacturing laboratory has resigned in order to enter retail pharmacy at Toledo, Iowa. His place is being filled by Henry P. Baumann of the class of 1929.—Professor Louis C. Zopf has been elected chairman of the U. S. P. sub committee dealing with dermatological products.—Mrs. Marybelle McPortland has been elected to membership in Alpha Lambda Delta and John Hohmann and Warren Jacobson, to Phi Eta Sigma, national honorary societies for freshmen women and men, respectively.—Virginia Wagener has been elected to membership in Delta Phi Alpha, national honorary German society. Students who won awards for excellency of scholarship were Susan A. Showers, Marybeth Hartman, Virginia Wagener, Veronica Jeska, and Maurice E. Wilson.

**University of Kansas, School of Pharmacy**—A student branch of the American Pharmaceutical Association, with 72 charter members, has been formed with Dr. Donald C. Brodie as faculty sponsor. The inaugural meeting was held the evening of May 14th. Members of the state board of pharmacy, officers of the Kansas Pharmaceutical Association, and representatives of wholesale houses and pharmaceutical companies were present. Local pharmacists and about 100 students also attended the meeting.—The Lehn and Fink medal for 1946 was awarded to Betty Jeanne Whitney, who also received the Merck award. She has been president of the student body for the past year and has been active in Kappa Epsilon and many other campus organizations.

**Massachusetts College of Pharmacy**—In order to acquaint physicians with some of the newer professional services offered by the pharmacist, the college presented an exhibit at the annual meeting of the Massachusetts Medical Society in May. The exhibit was chiefly devoted to hydrophilic ointment bases and their uses, and to extempor-



aneous preparations of penicillin and their advantages over penicillin preparations now on the market. A similar exhibit was presented at the annual convention of the Massachusetts State Pharmaceutical Association, in June.—Miss Clara A. Robeson has been appointed librarian of the Sheppard Library, replacing Miss Ethel J. Heath who died on December 31, 1945. Miss Robeson is a graduate of Boston University and the Library School of Simmons College. Miss Louise F. Chandles has been appointed assistant librarian. She is a graduate of Wheaton College and the Library School of Simmons College.—Gilman N. Cyr, Assistant in Pharmacy during the session of 1945-6, has been awarded a fellowship by the American Foundation for Pharmaceutical Education. He will study for the doctorate at Purdue University.—Joseph D. Matthes, formerly instructor in chemistry at the Massachusetts College of Pharmacy, sails for the near east soon to assume his new duties as Visiting Adjunct Professor of Pharmaceutical Chemistry at the American University, Beirut, Lebanon.

**University of Michigan, College of Pharmacy**—A pharmaceutical conference sponsored by the college of pharmacy in conjunction with the Michigan Branch of the American Pharmaceutical Association was held on the campus on May 28. Faculty members took part in the program. As a guest speaker Mr. Garnee F. Emch of Toledo and a member of the Ohio State board of pharmacy declared that medical colleges should not stop in their education and merely teach disease, surgery, anatomy and diagnosis but should teach them also to know drugs and their actions and not leave this part of their education to the pharmaceutical manufacturing concerns. Pharmacists can do much to obtain the confidence of physicians by carrying only the highest quality of pharmaceutical products available, by having adequate stock and by maintaining reference libraries so that pharmacists may answer any questions doctors may ask concerning drugs.

**University of Minnesota, College of Pharmacy**—Spring quarter enrollment was 146 students.—On January 30, Dr. Justin L. Powers of Washington, D. C., lectured to the student body on problems confronting the Committee on the National Formulary of the A. Ph. A.—The Ninth Pharmaceutical Institute offered by the University of Minnesota on January 28-30, was attended by 60 pharmacists from Minnesota and Neighboring states. Off-campus lecturers who contributed to the success of the program were Dr. Justin L. Powers of Washington, D. C., Mr. Charles F. Buck of Indianapolis, Dr. Robert D. Coghill of North Chicago, Mr. Carl W. Edwards of Chicago, and Dean G. L. Jenkins of Lafayette.—The 62nd Annual Meeting of the Minnesota State Pharmaceutical Association was held in St. Paul on May 6-8. All members of the faculty gave lectures or reports during the sessions and Dean Charles Rogers presided as chairman of the Scientific and Practical Pharmacy Section. At the conclusion of the meeting, Dr. C. V. Netz was installed as secretary for the ensuing year and Dean Rogers was elected chairman of the Executive committee. Classes in the college of pharmacy were dismissed for the last 2 days so that the students could attend the sessions.—At the Cap and Gown Day Convocation on May 16, it was announced that the following pharmacy students were win-

ners of the designated fellowships, scholarships, honor awards, or prizes, or were elected to honor societies: Akira Aisano, Frank Bope and Douglas Tall to Phi Lambda Upsilon Society; Minnesota State Pharmaceutical Association Graduate Fellowship by R. F. Doerge; S. W. Melendy Memorial Fellowships by Akira Aisano and R. E. King; Lederle Fellowships in Pharmaceutical Chemistry by W. S. Benica, F. E. DeGangi and R. H. Miller; American Foundation Fellowship by Robert Bowles; Minnesota State Pharmaceutical Scholarship and Key by Jeanne Stageberg; Samuel W. Melendy Memorial Scholarships by Ruth Jensen, Jean Kotchevar, Roman W. Zweber, Arthur Mortenson, Albert Musich, Elmer Hunziker, Clement Doran, James Miller and Robert Warren; Lehn and Fink Medal by Douglas Tall; Wulling Club Key by Robert W. Green; Rho Chi Sophomore Prize by Arthur Mortenson; and Kappa Epsilon Award by Jeanne Erickson.—William J. Rost and Rita Cincoski were awarded American Foundation Scholarships and Elmer Josephs was given the William S. Merrell Scholarship.—Promotions effective July 1, 1946, include Mr. Rugnar Almin to assistant professor, Dr. T. O. Soine to associate professor, and Dr. C. V. Netz to professor and head of the department of pharmacy.—Dr. W. J. Hadley of Howard College has been added to the faculty as associate professor.—After 44 years of service to the University, Professor Gustav Bachman retired on July 1 as professor emeritus.

**University of Nebraska, College of Pharmacy**—New members in Rho Chi are Charlotte Cox, James Fisher, Melvin Gibson and John Street.—Victoria Chilquist and Dr. Edwin Lyman have been elected to associate memberships in Sigma Xi and Howard Jensen and Eugene Kimura have been advanced to active membership.—Dr. J. B. Burt attended the meeting of the fifth district at Detroit Lakes, Minnesota, in June.—Dr. A. E. Schwarting addressed the National Federation of Beekeepers meeting at Atlantic, Iowa, recently on the topic "Nectar Bearing Plants that are used as Drugs". Fifty-seven students are enrolled in the summer session in the college of pharmacy.—Charlotte Cox and Victoria Chilquist have been elected to Iota Sigma Pi.

**University of Oklahoma, School of Pharmacy**—A number of books have been received as gifts to the library from Phm. Felix W. Bird. Among them is a United States Dispensatory, 1847. Phm. Lionel P. Walker has sent the Pharmacy Military Museum several pieces of enemy pharmacy equipment including a set of Japanese analytical weights in a silk lined mahogany box with celluloid forceps and a small compact prescription balance.—Dr. Ralph Bienfang has been appointed to membership on the university elections committee.—The twelfth annual convention banquet of the Oklahoma University Pharmaceutical Association was held on March 1.

**Philadelphia College of Pharmacy and Science**—At the annual meeting of the alumni association on June 5, J. Mervin Rosenberger was elected president for the coming year. The retiring president, Linwood F. Tice gave semi-centennial certificates to thirty members of the class of 1886 who were guests at a special luncheon given them by President Ivor Griffith.—Forty-two students were graduated at the June commencement. Honorary degrees were conferred upon Dr. Ko

Kuei Chen, of Eli Lilly and Company; Brua C. Goodhart of Marian, and Joseph W. E. Harrisson of Lansdowne, Pennsylvania. Dr. Chen gave the commencement address. His subject was "Is it not Happiness to Practice Constantly What you have Learned?"—For high scholarship, Dorothy H. Turner was designated as "Distinguished." Raymond L. Chrismer, Edith M. Carson, Stanley M. Davis, Isidore Dintzia, Martin Goldberg, Ida M. Ritter and Sirmiko R| Utsurromiya were designated as "Meritorious." Nancy R. Brudy was awarded the Frank Gibbs Ryan prize for the best average in the chemical and pharmaceutical laboratory courses. On June 5, the alumni association gave a dinner in honor of the 450 graduates who served in the armed forces in the second world war.

**University of Pittsburgh. College of Pharmacy**—June 13, was alumni day. The celebration of thirtieth and twentieth anniversary classes was especially notable. The annual reunion banquet was held in the evening with approximately one hundred and fifty guests present. They represented especially the classes graduating in five year periods. The address of the evening was given by Dr. Louis Marchi who spoke on "Social Implications of Atomic Energy".

**Rutgers University, New Jersey College of Pharmacy**—Dr. Thomas D. Rowe, formerly assistant dean at the medical college of Virginia and for the past year holding a similar position at Rutgers became dean upon the retirement of Dean Little on July 1. Dean Little will continue in service as professor of chemistry.—Dr. Frederick Bissell, on being released from the Navy on July 1, was named assistant professor of English. In the service, Dr. Bissell held the rank of Commander in the Naval Intelligence service. Before entering the Navy he was head of the department of English in the University of Puerto Rico.—The Joint Committee on Professional Relations of the New Jersey Pharmaceutical Association and the New Jersey Medical society has approved the establishment of a research fund to support research at the College of Pharmacy for the New Jersey Formulary. Dr. T. D. Rowe has been appointed editor of the Formulary and director of the research program at the college. Mr. George Krause of the department of pharmacy will assist in the work.—Dr. LeRoy C. Keagle presented a paper, "Tropanone and its Homologs", before the medical section of the American Chemical Society in Atlantic City in April.—The Rutgers student branch of the American Pharmaceutical Association conducted its third annual science day on May 17. The purpose of the exhibit was to present professional pharmacy to the public.—In conjunction with the Northern New Jersey Branch of the American Pharmaceutical Association, the college of pharmacy sponsored a series of five weekly lectures for the pharmacists of the state. The lectures were on problems of interest to the practicing pharmacists. About 75 registered pharmacists attended the series.—Dr. John Cross of the Research department of Merck and Company has accepted a position as assistant professor of pharmacy and assumed his duties on June 1, 1946.—George Krause has recently been appointed instructor in pharmacy.

**University of South Carolina, School of Pharmacy**—The students branch of the American Pharmaceutical Association held its annual banquet on May 23. Pharmacist-Governor Ransome Williams and President Norman Smith were the principal speakers. One hundred and fifteen were in attendance. Among the guests were many prominent pharmacists of the state.—Gloria Scruggs was awarded the Norris loving cup because of outstanding leadership as president of the student branch. The students of the class in commercial pharmacy were recently given an instructive trip through the plant of the McKesson-Murray Wholesale Drug Company.—Nine candidates for licensure appeared before the board of pharmacy on June 20.

**St. Louis College of Pharmacy and Allied Sciences**—The spring term enrollment was 174. Summer enrollment is 115. With the fall freshmen class limited to 100, total enrollment in September will probably be about 250.—Fifteen students graduated at exercises held on June 6, and several others will complete their work during the summer. First prize in the graduating class was awarded to Toshiki Iwata, second to Sister Rene Hickey. Alumni prizes were awarded to Robert H. Moore in the junior class, Sister Regina Marie Pingle in the sophomore class, and Robert L. Bogner and Morry Fox in the freshman class. The Womard tuition prize was won by Miss Patricia Huth. Dr. Gaston DeBois of Monsanto Chemical Co. was the commencement speaker. He emphasized the growing cooperation between the pharmacist, the chemist, and the physician. At the senior banquet portraits of the late Charles E. Caspari, dean of the college until 1942, and the late Frederick W. Sultan, chairman of the board of trustees until 1944, were presented to the college by Mr. John S. Norton and Mr. E. E. Pershall.—New members of the Board of Trustees are Dr. Clarence E. Campbell, Dr. Gaston DuBois, Mr. John S. Norton, and Mr. Richard S. Reamer.—The Gammi Pi chapter of Kappa Psi was installed on March 19. The sixteen charter members were joined by five new members on May 13.

**Temple University, School of Pharmacy**—Captain Frances Marr, who has recently been discharged after three years of service in the Women's Army Corps, and who before enlistment was the pharmacist in Friends Hospital of Philadelphia, has been appointed a laboratory instructor in pharmacy.—On September, 1947, at the latest, the school of pharmacy will be housed in its new \$1,000,000 property, purchased several months ago from the Federal Government. The school is expected to be the finest institution of its kind in America. It is located virtually in the geographical center of Philadelphia, at Broad street and Allegheny avenue. It is within 10 minutes traveling time of the Pennsylvania, Baltimore and Ohio and Reading railroad stations. When the structure was erected within the last decade, it was considered one of the most beautiful buildings in the City of Philadelphia. Work on remodeling the building to fit the needs of modern pharmaceutical education is now being carried on. The entire building will be equipped with audio-visual apparatus and the laboratories will be of the most modern type for both undergraduate and graduate instruction.

**Medical College of Virginia, School of Pharmacy**—Dr. Milton L. Neuroth joined the faculty as assistant professor of pharmacy as of January 1, 1946.—The following members of the faculty attended the Federation of American Society for Experimental Biology, which met in Atlantic City in March. Dr. Lynn D. F. Abbott, Dr. J. C. Forbes, Dr. H. B. Haag, Dr. Herbert McKennis, Dr. E. L. Smith, and Dr. R. B. Smith, Jr., Dr. E. L. Smith presented a paper at this meeting.—Dr. S. S. Negus and R. D. Hughes attended the A. A. A. S. meeting in St. Louis the last of March.—Dean Rudd addressed the science club of Emporia high school on March 19. He was accompanied on this visit by Dr. Negus who is greatly interested in high school science work.—Dr. R. B. Smith, Jr. and Dr. K. L. Kaufman attended the meeting of District 2 A. A. C. P. and N. A. B. P. in Philadelphia, April 7 and 8. Dr. Kaufman presented a paper on the question of continued acceleration.

**The University of Washington, College of Pharmacy**—Arthur J. Anderson and Bertha Chinn were recent Rho Chi initiates.—The Rho Chi award went to Gilbert Clearby.—The American Foundation for Pharmaceutical Education scholarships were held by Helen Bachman, James Chase, Jean Hammarlund, and Louise Osborne. Other awards for excellence in scholarship were made as follows: McKesson and Robins, to Sanford Thal; Lambda Kappa Sigma, to Rosalind Swalling; Lehn and Fink medal, to John P. Nesbit; Linton Memorial, to Alfred Huxsol; Washington State Pharmaceutical Association to Beverly Sasser; Woman's Auxiliary of the State Association, to Norma Nielsen, Alfred Engthrom, Charland Berg and Margaret Parks.

**State College of Washington, School of Pharmacy**—Dr. Hugh C. Vincent has resigned as assistant professor of pharmacy and on June 15, he joined the research staff of the Abbott Laboratories in North Chicago.—Dr. Gertrude Horn, a graduate of the State College who received the doctor's degree from the University of Minnesota and also has since been on the research staff of the Burrows-Welcome Company, has been appointed assistant professor of pharmacy. An enrollment of 175 students is anticipated for next September.—Dr. Allen I. White was a lecturer at the British Columbia Pharmaceutical Association's annual summer session and also addressed the convention of the association early in June.—Epsilon chapter of Rho Chi has inducted seven students to membership during the year. They are Alma Busch, Katherine Frederich, Mary Groulx, Maxine Myers, Catherine Pettibone, Shirley Roeder, and Lorraine Tschetter.—Scholarships and fellowship awards for excellence in scholarship for the past year have been awarded to Marylin Smith, Norma Modro, Dorothy Hill, Katherine Frederich, Helen Reed, Eva Bull, Dessie Brady, Catherine Pettibone, Charles Martin, Maxine Myers, Shirley Roeder, Frances McKierman, and Jean Hubbard.—Two half teaching fellowships of \$900 each are available for the coming year. There are also a few scholarships for foreign students.

**Wayne University, College of Pharmacy**—After twelve years of distinguished service Walter H. Blome retires at the age of seventy. In recognition of his services to the university and his contributions to pharmaceutical research, literature, and education, the Board of Edu-



cation of the university at its last meeting conferred the title of Professor Emeritus of Pharmacy upon him. Professor Blome is the co-author of a textbook on the principles of pharmacy and a textbook on pharmacognosy.—Previous to his connection with Wayne University, he had served as a scientific executive of Frederick Stearns Company Laboratories for a period of twenty-eight years.

**Western Reserve University, School of Pharmacy**—Dr. Malcolm S. Trupp has resigned from the pharmacy staff to accept a position as pharmaceutical research chemist with Schieffelin and Company in New York.—Dean Arthur P. Wyss, Edna Martinez, Henrietta M. Tarn, Dolores L. Deptula, Chalotte D. Curtiss, Merrill S. Brooker, Margaret N. Chaney and Margaret Bremmer have been elected to membership in Rho Chi. The Ralph A. Spengler, Jr. award in botany, as did one of the Merck awards, went to Miss Curtiss and the other Merck award went to Mr. Brooker. Miss Curtiss was the recipient of an American Foundation for Pharmaceutical Education Scholarship.—The curriculum has been radically changed and improved in order to make it conform more closely to the requirements of the syllabus. The hours in pharmaceutical arithmetic and fundamentals of pharmacy have been reduced by 50 per cent and courses in algebra, trigonometry and physics have been added to compensate for this reduction. Since the former curriculum had an excessive number of hours in quantitative pharmaceutical chemistry, these were reduced and the course in dispensing was increased by one semester. The curriculum is well balanced but the load is too heavy for four years. If five years could be allowed and there was an opportunity to include some elective courses, it would undoubtedly be of greater value to the student.

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#### Pharmacy Subsection

##### American Association for the Advancement of Science

The next meeting of the American Association for the Advancement of Science will be held in Boston December 26-31. During the war it was necessary to cancel meetings of the Association and along with it the meetings of the Subsection on Pharmacy. It is now planned that the Subsection meetings will be renewed on a more extended basis than ever before. Assurance has been received that sufficient hotel accommodations will be available to house all out-of-town guests. Because the total program for the Association is very extensive, it is necessary that the program material be submitted by October 21, 1946. We hope that the complete program of the Pharmacy Subsection will be printed in the general program.

All persons wishing to present a paper in the fields of pharmacy, pharmaceutical chemistry, pharmacology, or pharmacognosy are invited to submit the title of their paper at this time and to submit the abstract and copy of the paper at a later date. The title should be sent to the Chairman of the Subsection.

Glenn L. Jenkins, Chairman.



## Miscellaneous Items of Interest

### PROGRAM PITTSBURGH MEETING

#### THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY FORTY-SIXTH ANNUAL MEETING

President, Glenn L. Jenkins  
Vice President, Gordon L. Curry  
Secretary-Treasurer, Clark T. Eidsmoe  
Chairman of the Executive Committee,  
B. V. Christensen

#### **Sunday, August 25**

- 10:00 A. M. Meeting of the Executive Committee  
2:00 P. M. First Session  
7:30 P. M. Joint Meeting of Executive Committee of American Association of Colleges of Pharmacy; American Council on Pharmaceutical Education; Executive Committee of National Association of Boards of Pharmacy and Council of The American Pharmaceutical Association.  
7:30 P. M. Meetings of American Association of Colleges of Pharmacy Committees

#### **Monday, August 26**

- 9:00 A. M. Teachers' Conferences  
2:00 P. M. Second Session  
6:30 P. M. Joint Dinner with National Association of Boards of Pharmacy  
8:30 P. M. Joint Session with National Association of Boards of Pharmacy and other interested groups (open meeting)  
Address: "The Pharmaceutical Survey", Dr. Edward C. Elliott, Director.

#### **Tuesday, August 27**

- 9:00 A. M. Joint Meeting of Teachers' Conferences, devoted to Conference on Graduate Education in Pharmacy  
11:00 A. M. Business Session of the Teachers' Conferences  
1:30 to 4:00 Final Session  
4:00 P. M. Meeting of the Executive Committee

#### **Wednesday, August 28**

Joint Meeting of the Executive Committee of The American Association of Colleges of Pharmacy, The American Council on Pharmaceutical Education, The Executive Committee of The National Association of Boards of Pharmacy, and the Council of The American Pharmaceutical Association

**Sunday, August 25, 7.30 P. M.**

1. Report of the Pharmaceutical Syllabus Committee, Henry M. Burlage
2. Report of the Committee on Status of Pharmacists in the Government Service, Arthur Einbeck
3. Report of the American Council on Pharmaceutical Education, A. G. DuMez

**Monday, August 26, 6:30 P. M.**

Joint Dinner with National Association of Boards of Pharmacy Address: "The Pharmaceutical Survey", Dr. Edward C. Elliott, Director

**Sessions of the Association**

**First Session, Sunday, August 25, 2:00 P. M.**

1. Roll Call
2. Appointment of Committee on Resolutions
3. Appointment of Nominating Committee
4. Appointment of Auditing Committee
5. Report of the President, Glenn L. Jenkins
6. Report of the Secretary-Treasurer, Clark T. Eidsmoe
7. Report of the Executive Committee, B. V. Christensen
8. Reports of Standing Committees:
  - (1) Committee on Relation of Boards and Colleges, Joseph B. Burt
  - (2) Committee on Libraries, Charles O. Lee
  - (3) Committee on Activities for Alumni, Thomas D. Rowe
  - (4) Committee on Problems and Plans, Rufus A. Lyman
  - (5) Committee on Educational and Membership Standards, P. H. Dirstine
  - (6) Delegates to the American Council on Education, B. V. Christensen
  - (7) Committee on Pharmaceutical Research, E. V. Lynn
  - (8) Committee on Committees, Glenn L. Jenkins
  - (9) Committee on Graduate Study, John E. Christian

**Second Session, Monday, August 26, 2:00 P. M.**

1. Presentation of Recommendations from the Conference of Teachers
2. Address. Mr. A. L. Combes, Director of the Education and Training Service, Veterans Administration
3. Reports of Special Committees
  - (1) Committee on Predictive and Achievement Tests, Charles V. Netz
  - (2) Committee on Professional Relations, P. A. Foote
  - (3) Committee on Distributive Education, E. R. Serles
  - (4) Committee on Personal Problems, J. Allen Reese
  - (5) Emergency Problems Committee, A. G. DuMez
  - (6) Committee on Five Year Program, E. L. Hammond
  - (7) Committee on Professorial Lectureship Tours, George E. Crossen
  - (8) Committee on Limitation of Enrollments, C. H. Rogers
  - (9) Committee on Five Year Curriculum, Ivor Griffith

- (10) Committee on World Congress for Pharmaceutical Education, George Urdang
- (11) Committee on Pan-American Conference on Pharmaceutical Education, R. B. Smith
- (12) Committee on Application of Educational Techniques used in the Armed Forces, Donald C. Brodie
- (13) Committee on Revision of Constitution and By-Laws, A. G. DuMez
- (14) Committee on Modernization of the Pharmacy Curriculum, E. P. Guth

**Third Session, Tuesday, August 27, 1:30 to 4:00 P. M.**

1. Report of the Editor of the American Journal of Pharmaceutical Education, Rufus A. Lyman
2. Reports of Special Representatives:
  - (1) Representative to the National Drug Trade Conference, J. Lester Hayman
  - (2) Delegates to the House of Delegates of the American Pharmaceutical Association, Glenn L. Jenkins
  - (3) Representatives to the National Wholesale Druggists' Association, Hugo Schaefer
  - (4) Representative to the National Association of Retail Druggists, E. R. Serles
  - (5) Directors of the American Foundation for Pharmaceutical Education Ernest Little
3. Report of the Historian, George Urdang
4. Report of Committee on Resolutions
5. Report of Auditing Committee
6. Miscellaneous Business
7. Election of Officers
8. Address of the New President
9. New Business
10. Executive Session

**Joint Meeting of Teachers' Conferences**

**Tuesday, August 26,**

- 9:00 A. M. Conference on Graduate Education in Pharmacy  
Chairman, John E. Christian; Vice-Chairman, Elmer H. Wirth; Secretary, Lloyd M. Parks
1. Chairman's Address, J. E. Christian
  2. Papers on:
    - (a) Graduate work in Pharmacy  
Presented by A. G. DuMez  
Discussed by E. P. Guth
    - (b) Graduate work in Pharmaceutical Chemistry  
Presented by T. C. Daniels  
Discussed by W. H. Hartung
    - (c) Graduate work in Pharmacology  
Presented by H. G. O. Holck  
Discussed by L. D. Edwards
    - (d) Graduate work in Pharmacognosy  
Presented by E. H. Wirth and R. F. Voight  
Discussed by L. D. Hiner

11:00 A. M. Business Session of the Teachers' Conferences

**Conference of Teachers of Pharmacy**

Chairman, Elmer M. Plein; Vice-Chairman, Arthur Purdum;  
Secretary, Louis A. Wilson

**Monday, August 26, 9:00 A. M.**

1. "Dispensing Pharmacy as the Culmination of the Pharmaceutical Curriculum", Leslie M. Ohmart
2. "The Prescription Forum Method of Teaching Incompatibilities" Joseph B. Sprowls
3. "The Washington Experiment", L. Wait Rising
4. "Education vs. Training in Pharmacy", George E. Crossen

**Conference of Teachers of Chemistry**

Chairman, Ole Gisvold; Vice-Chairman, H. G. Hewitt;  
Secretary, Ray S. Kelley

**Monday, August 26, 9:00 A. M.**

1. Call to Order
2. Report of the Chairman, Ole Gisvold
3. Report of the Secretary, R. S. Kelley
4. Report of the Committee on By-Laws and Procedure, C. O. Wilson
5. Appointment of Nominating Committee
6. "Biochemistry in the Pharmaceutical Curriculum"—A Symposium
  - (1) Howard B. Lewis
  - (2) Charles W. Bauer
  - (3) Charles O. Wilson
7. Unfinished Business
8. New Business
9. Report of the Nominating Committee
10. Installation of New Officers
11. Adjournment

**Conference of Teachers of Pharmacognosy and Pharmacology**

Chairman, L. D. Hiner; Vice-Chairman, Ralph F. Voight;  
Secretary, Martin S. Ulan

**Monday, August 26, 9:00 A. M.**

1. "Teaching Techniques in Pharmacognosy", L. D. Hiner
2. "Chemurgic Research with Drug Plants", Arthur E. Schwarting
3. "Teaching Aims in Pharmacognosy", Ralph Voight
4. "What are Industry Requirements of Pharmacognosy Research and Teaching?", George E. Hocking
5. "Visual Aids in Teaching Pharmacology", Martin S. Ulan
6. "Graduate and Undergraduate Research in Pharmacology", Benedict E. Abreu
7. "Industry Requirements of Pharmacology", Hans Molitor

**Conference of Teachers of Pharmaceutical Economics**

**Monday, August 26, 9:00 A. M.**

Chairman, Lawrence F. Ferring;  
Secretary, Joseph H. Goodness

1. Chairman's Address
2. Secretary's Report
3. "The Use of Drug Store Operating Statements and Balance Sheets as Teaching Material in Accounting for Pharmacy Students", Paul C. Olsen
4. "Pharmaceutical Economics in the Post-war Curriculum", Joseph H. Goodness
5. "Professional Relations", George F. Archambault
6. "The Pharmaceutical Syllabus—Tentative Fifth Edition (Revised)"  
—A Symposium

### CONVENTION PROGRAM

#### AMERICAN PHARMACEUTICAL ASSOCIATION

The annual convention of the American Pharmaceutical Association will be resumed when the Association observes the ninety-fourth anniversary of its founding and holds its 92nd annual meeting August 27 to 30 inclusive at the William Penn Hotel, Pittsburgh, Pennsylvania. Only twice in its long history has the Association found it necessary to forego annual meetings—in 1861 and in 1945. Both times the lapse was due to war conditions.

The program of the 1946 annual meeting will be divided into General Sessions, meetings of the House of Delegates and meetings of the Sections, according to the following program.

#### General Sessions

Tuesday, August 27 at 8:30 P. M., immediately following the annual banquet.

Thursday, August 29 at 8:00 P. M., and

Friday, August 30 at 2:00 P. M.

#### House of Delegates' Meetings

Tuesday, August 27 at 4:00 P. M.

Wednesday, August 28 at 1:30 P. M.

Thursday, August 29 at 9:00 A. M.

Friday, August 30 at 9:00 A. M.

#### Section Meetings

##### Scientific Section

Four meetings of the Scientific Section have been arranged as follows:

Wednesday, August 28 at 9:00 A. M. and 1:30 P. M.

Thursday, August 29 at 2:00 P. M.

Friday, August 30 at 9:00 A. M.

##### Section on Practical Pharmacy

Wednesday, August 28 at 9:00 A. M. (joint session with American Society of Hospital Pharmacists and American College of Apothecaries)

Thursday, August 29 at 2:00 P. M.

##### Section on Education and Legislation

Wednesday, August 28 at 9:00 A. M.

Thursday, August 29 at 2:00 P. M. (joint session with Section on Pharmaceutical Economics and Conference of Pharmaceutical Association Secretaries)  
Section on Pharmaceutical Economics

Wednesday, August 28 at 9:00 A. M.

Thursday, August 29 at 2:00 P. M. (joint session with Section on Education and Legislation and Conference of Pharmaceutical Association Secretaries)  
Section on Historical Pharmacy

Wednesday, August 28 at 9:00 A. M.

Thursday, August 29 at 2:00 P. M. (joint session with American Institute of the History of Pharmacy)

**Related Organizations**

**American Society of Hospital Pharmacists**

Tuesday, August 27 at 9:00 A. M. and 1:30 P. M.

Wednesday, August 28 at 9:00 A. M. (joint session with American College of Apothecaries and Practical Pharmacy Section)

Thursday, August 29 at 2:00 P. M.

**American College of Apothecaries**

Tuesday, August 27 at 9:00 A. M. and 1:30 P. M.

Wednesday, August 28 at 9:00 A. M. (joint session with American Society of Hospital Pharmacists and Practical Pharmacy Section)

Thursday, August 29 at 2:00 P. M.

**American Institute of the History of Pharmacy**

Wednesday, August 28 at 9:00 A. M.

Thursday, August 29 at 2:00 P. M. (joint session with Section on Historical Pharmacy)

**Conference of Pharmaceutical Association Secretaries**

Monday, August 26 at 9:00 A. M. and 2:00 P. M.

Tuesday, August 27 at 9:00 A. M. and 2:00 P. M.

Wednesday, August 28 at 9:00 A. M.

Thursday, August 29 at 2:00 P. M. (joint session with Section on Pharmaceutical Economics and Section on Education and Legislation)

**American Association of Colleges of Pharmacy**

Sunday, August 25 at 2:00 P. M.

Monday, August 26 at 9:00 A. M. and 2:00 P. M.

Tuesday, August 27 at 9:00 A. M. and 1:30 P. M. to 3:30 P. M.

**National Association of Boards of Pharmacy**

Monday, August 26 at 9:00 A. M. and 2:00 P. M.

Tuesday, August 27 at 9:00 A. M. and 1:30 P. M. to 3:30 P. M.

**Plant Science Seminar**

Thursday, August 22 through Saturday, August 24 Seminar Headquarters—Roosevelt Hotel)



**HOTEL RESERVATIONS**

All reservations will be made through the Housing Bureau of the Pittsburgh Convention Bureau. Under this plan, reservations for convention goers are not accepted directly by the Hotel William Penn or other hotels. This system assures reservations of rooms for all and makes it possible to avoid prolonged correspondence with several hotels, as the Housing Bureau will locate a room in another hotel, if the headquarters' hotel is filled.

Due to crowded conditions which still prevail, single rooms are extremely scarce. Wherever possible, members should arrange to share a room with another pharmacist. Association officials believe that satisfactory housing can be provided for everyone, but normal choice of rooms cannot be expected at this time.

**OUTSTANDING SPEAKERS**

Among the outstanding speakers to address various sessions and lead discussions are the following:

Dr. Austin Smith, Secretary of the Council on Pharmacy and Chemistry of the American Medical Association

Dr. P. B. Dunbar, U. S. Commissioner of Food and Drugs

Dr. E. C. Elliott, Director of The Pharmaceutical Survey

Dr. W. Paul Briggs, Director of Pharmacy Services in the U. S. Veterans' Administration

Dr. E. F. Cook, Chairman, U. S. P. Revision Committee

Dr. J. L. Powers, Chairman, N. F. Revision Committee

There will be a number of others to be announced as soon as formal acceptance to invitations have been received.

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**TENTATIVE PROGRAM OF THE 23rd PLANT SCIENCE SEMINAR****Thursday, August 22nd.**

- 9:30—10:30 Registration at the Roosevelt Hotel
- 10:30—12:30 Opening Business Meeting: Appointment of committees, announcements, etc.
- 1:30— 3:00 Trip to H. J. Heinz Co., Plant
- 3:30— 4:30 Trip to Clark Plant
- 8:00 Lecture on Glass by Dr. Alexander Silverman at Reception Room of the Mellon Institute.

**Friday, August 23rd**

- 9:30—12:30 Trip to Phipps Conservatory, Schenley Park, Conducted by Mr. Frank S. Curto
- 2:00— 4:30 Meeting at the University of Pittsburgh, School of Pharmacy.
  - Welcome—Dean Edward C. Reif.
  - Motion Picture: Drug Plant Cultivation, E. H. Wirth.
  - Roundtable Discussions.
  - (1) Drug Plant Cultivation.
  - (2) Current Problems in Pharmacognosy.
- 6:30 Banquet at the Roosevelt Hotel

- 8:00 Lecture: "Some Pennsylvania Flowers—Habits and Habits," by Dr. O. E. Jennings.

**Saturday, August 24th**

- 8:00 Leave for Botanizing Trip to Ohioplye, Pa.  
Dr. O. E. Jennings, Leader
- 10:00—12:00 Botanizing
- 12:00 Lunch at Ohioplye Hotel
- 2:00—4:00 Botanizing
- 8:00 Final business meeting at Roosevelt Hotel:  
Reports of Committees, election of officers, etc.

## A Memorial

JOHN GROVER BEARD

Dean John Grover Beard died at his home in Chapel Hill on the afternoon of April 23 from a cerebral hemorrhage suffered two hours earlier. The suddenness of his death was a great shock. His health had not been good for a long time and he had had a severe stroke on May 3rd of last year. Although he had not thoroughly recovered from this seizure, he had been teaching his classes all year and within the past few weeks he had taken on a portion of his office work again. His health seemed to be improving and he was interestedly making plans for the future of the School of Pharmacy.

Dean Beard was a great teacher. He began to teach the year of his graduation (1909) from the School of Pharmacy of the University of North Carolina; he continued teaching in the same school through the years; and he taught his last class on the day of his death. His favorite field was materia medica, but during his long service as a member of the faculty he had at one time or another taught a majority of the courses in the pharmaceutical curriculum. He was preparing his lecture on materia medica for the following morning when the fatal stroke came.

During his years at the University, Dean Beard had risen in due course from instructor to full professor in 1919. Following the death of Dean E. V. Howell in February, 1931 he was elected immediately to the deanship and he continued to serve in this capacity until his death. He loved to teach and he felt very keenly his responsibilities as a teacher. "The future of pharmacy," said he, in a paper before the N. C. P. A., "rest in a very large measure in the hands of its teachers. They are moulding the plastic material that becomes the pharmacists of tomorrow, working intimately with it during a very impressionable period. Few students become better than the ideals of their instructors, and it is very vital that these ideals be kept very high. There will follow in the wake of the present day pharmacist a vast company of young men and women to take up the task of providing suffering humanity with the curatives that must always be needed. It devolves upon the present generation to guarantee its lines of

succession. The intangible question of 'atmosphere' of an institution in so far as it can be reduced to concrete terms is a question of faculty. Everything else should be secondary to the main matter of keeping the quality of men who compose the faculty up to the highest possible standards of true an liberal scholarship."

Dean Beard was president of the American Association of Colleges of Pharmacy in 1929-30. He served as president of the National Conference of Pharmaceutical Association Secretaries in 1930-31, and as first vice-president of the A. Ph. A. in 1931-32. (He was local secretary for the Asheville meeting of the A. Ph. A. in 1923.) The American Association of Colleges of Pharmacy named his chairman of the committee and editor of the fourth revision of the Pharmaceutical Syllabus. He was also secretary of a national committee of 15, appointed by the American Council on Pharmaceutical Education to direct a nationwide study of pharmaceutical education. From 1917-19 he was president of the Elisha Mitchell Scientific Society. He is the author of "Therapeutic Terms and Common Diseases," and co-author with the late Dr. Geo. Howe of "Latin for Pharmacists." He has also contributed numerous articles to state and national scientific magazines. In 1930 he was awarded the honorary degree of master of pharmacy by the Philadelphia College of Pharmacy. He was a member of Rho Chi, Kappa Sigma and Kappa Psi.

His outstanding services to his own State Pharmaceutical Association will be remembered always. He affiliated with the organization in 1908, the year of his licensure as a pharmacist. In 1923, by vote of the organization, he was made a life member. He was secretary-treasurer of the N. C. P. A. from 1912-1940. In 1915 he founded the Carolina Journal of Pharmacy and was its managing editor from that date until he gave up the association secretaryship in 1940. He was made historian of the organization in 1941.

John Grover Beard was born in Kernersville, N. C., on April 8, 1888, the son of the late James William and Susan Jane Phillips Beard. He lived for awhile in Winston-Salem, but the greater part of his life was spent in Chapel Hill. He loved the University with a deep devotion. He enjoyed walking in the woods around the village and until a few years ago spent much of his time riding his horse. He loved to drive a car and in his college days was a beautiful dancer. He married Miss Mary Polk McGehee, of Chapel Hill, on April 22, 1913, who died about sixteen years ago. One son was born of this union, Lt. Commdr. J. G. Beard, now stationed in Oregon. On December 27, 1932 he married Miss Gladys Angel, of Liberty, N. Y., director of Physical Education for Women at the University. The Beards own a lovely home just outside of Chapel Hill and they always enjoyed having students drop by to see them. The Dean was proud of the boys and girls who studied pharmacy. He liked to keep up with them after they graduated and always sent them messages on their birthdays. Faculty and students appreciated his fine work. He will be missed greatly. North Carolina is proud of his accomplishments and of his services to his profession.

Alice Noble

**THE PHARMACEUTICAL SURVEY COMMITTEE**

Washington, D. C., June 28, 1946—The Committee on the Pharmaceutical Survey held its first meeting at the Statler Hotel, Washington, D. C., on June 26. This Committee was selected by the American Council on Education in accordance with plans for the national study of pharmaceutical education, practices, and services, as announced by the Council last month. The members of the Committee are:

George D. Beal.....	Assistant Director, Mellon Institute
W. Paul Briggs.....	Veterans Administration
W. W. Charters.....	Director, The Research Service, Stephens College
B. V. Christensen.....	Dean, College of Pharmacy, Ohio State University
Donald A. Clarke.....	Apothecary-in-Chief, The Society of the New York Hospitals
George V. Doerr.....	McKesson and Robbins, Inc.
A. G. DuMez.....	Dean, School of Pharmacy, University of Maryland
Carson P. Frailey.....	Executive Vice President, American Drug Manufacturers Association
H. Evert Kendig.....	Dean, School of Pharmacy, Temple University
Frank W. Moudry.....	Secretary, Minnesota State Board of Pharmacy
Edward S. Rogers.....	Chairman of the Board, Sterling Drug, Inc.
Robert L. Swain.....	Editor, "Drug Topics"
Frank O. Taylor.....	Parke, Davis & Company
John A. Stevenson.....	President, The Penn Mutual Life Insurance Company
Charles R. Walgreen, Jr.....	President, Walgreen Drug Company
Also in attendance were:	
George F. Zook.....	President, American Council on Education
A. J. Brumbaugh.....	Vice President, American Council on Education
E. L. Newcomb.....	Secretary, American Foundation for Pharmaceutical Education
Edward C. Elliott.....	Director, The Pharmaceutical Survey
Alice L. Richards.....	Executive Assistant to the Director, The Pharmaceutical Survey

Dr. W. W. Charters was selected as Chairman of the Committee and Dean A. G. DuMez as Vice Chairman. It is expected that the Committee will create a number of consulting Subcommittees representing the various interests concerned with the conduct and results of the Survey.

The Committee devoted its meeting principally to the consideration of the detailed plans of the Survey, presented by the Director, Dr. Edward C. Elliott. These included thirty-six special studies of particular problems of pharmaceutical education, practices and

services. The Committee recommended that the projects relating to the testing of the abilities and the achievements of students of pharmacy and to the qualifications for the faculties of the training institutions should receive first attention. Projects were also approved for the development of standards for the selection and the admission of pharmacy students; for the guidance of pharmacy students; for a spot analysis of present-day prescriptions to determine the knowledge required by the pharmacist for compounding; and for analysis of the activities engaged in by pharmacists—professional, commercial, and civic. The budget for the first of the three years of the expected operation of the Survey was adopted. The next meeting of the Committee will be held in October.

In his report of progress, Dr. Elliot called especial attention to the widespread public interest in the work of the Survey and the support being given by the pharmaceutical organizations, industries, and press.

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**Scientific and Educational Papers Published by the Faculties of the  
Colleges of Pharmacy during the Calendar Year  
1945 and 1946 to Date**

**University of Florida, School of Pharmacy—**

Incompatibilities in Prescriptions. VI. Hydrolysis of Zinc Salts." William J. Husa and Jake K. Dale. *Journal of the American Pharmaceutical Association, Scientific Edition* 34: 163 (1945)

"The Enhancement of the Plasma Concentration of Penicillin in Dogs by the Simultaneous Administration of Para-aminohippuric Acid.III." Karl H. Beyer, W. F. Verwey, Lawrence Peters, and Paul A. Mattis. *Am. Jour. Med. Sci.* 209: 608, (May) 1945.

"The Existence of a Microbiologically Inactive "Folic Acid"-Like Material Possessing Vitamin Activity in the Rat." Lemuel D. Wright, Helen R. Skeggs, Arnold D. Welch, Kenneth L. Spriague and Paul A. Mattis. *J. Nutrition* 29: 289, (May) 1945.

"Para-aminohippuric Acid; Its Pharmacodynamic Actions." Karl H. Beyer, Paul A. Mattis, Elizabeth A. Patch and Horace F. Russo. *J. Pharm. and Exper. Ther.* 84: 136, (June) 1945.

"Toxicological Manifestations and Pathological Findings Following the Administration of Para-aminohippuric Acid". Paul A. Mattis, Karl H. Beyer, Samuel E. McKinney and Elizabeth A. Patch. *J. Pharm. and Exper. Ther.* 84: 147, (June) 1945.

**University of Kansas, School of Pharmacy—**

Brodie, D. C., Hiestand, W. A., and Jenkins, G. L., The Inhibitory Effect of Certain Naphthoquinones on the Hemorrhagic Action of Dicumarol. *J. A. Ph. A., Sci. Ed* V. 34, No. 3 (March) 1945, Pp. 73-75.

Brodie, Donald C., and Hiestand, William A., Effect of Isolated Posterior Pituitary Principles on Survival of the Primitive Respiratory Center in the Decapitated Rat Head. *Am. J. Physiol.* V. 144, No. 5, (October) 1945, pp. 658-660.

**The George Washington University, School of Pharmacy—**

Absorption of Single Doses of Iron, L. W. Hazleton and Emily A. M. Godfrey: *J. Pharmacology*, 83: 158, 1945.

A Proposal for Modification of the Biological Assay Laboratory Requirement of the Pharmaceutical Syllabus, L. W. Hazleton, A. J. Ph. Ed., Jan. 1945.

Factors Influencing the Cathartic Activity of Senna in Mice, L. W. Hazleton and Cathleen D. Talber, *J. A. Ph. A., Sci. Ed.* 34: 260, 1945.

**State University of Iowa, College of Pharmacy—**

Dihydroxypropyl Theophylline, Its Preparation and Pharmacological and Clinical Study. James W. Jones. Accepted for early publication in *Jour. A. Ph. A.*

**Long Island University, Brooklyn College of Pharmacy—**

Ralph A. Cheney. The Effects of Caffeine on Oxygen Consumption and Cell Division in the Fertilized Egg of the Sea Urchin, *Abbracia punctulata*. *Journal of General Physiology*, vol. 29, no. 2, p. 63-72, Nov. 20, 1945.

Medicinal Herbaceous Species in the Northeastern United States, *Bulletin of the Torrey Botanical Club*, Vol. 73, no. 1, p. 60-72, Jan. 1946.

**University of Washington, College of Pharmacy—**

"Comparative Analyses of Normal and Tetraploid *Datura Stramonium* and *Datura Tatula*." Louis Fischer and Orville H. Miller. *Jour. Amer. Pharm. Assn. Sci. Ed.* XXXV. No. 1, (Jan. 1946) p. 23-27.

Record Keeping in the Dispensing Laboratory" E. M. Plein and L. W. Rising, *Am. Jour. Pharm. Ed.* 9, p. 221-3 (1945)

"A Note on Modern Prescribing Tendencies", E. M. Plein and L. W. Rising, *Jour. A. Ph. A., Prac. Ed.* 6, p. 47-8 (1945)

"An Active Prescription File as a Teaching Aid", L. W. Rising and E. M. Plein. *Am. Jour. Phar. Ed.* 7, p. 390 (1945)

"A Further Note on Modern Prescribing Tendencies." L. W. Rising, E. M. Plein and J. Strom, *Jour. A. Ph. A. Prac. Ed.* 7, p. 161 (1946)

A chapter in "American Pharmacy", a textbook, Elmer M. Plein, Dean R. A. Lyman, (University of Nebraska) Editor-in-Chief, J. B. Lippincott Co., Philadelphia (1945).

"Penicillin versus Mutation." L. Wait Rising. *Pacific Drug Review* LVII, 7, (July 1945) p. 43-4.

Penicillin, a Prescription Chemical. L. Wait Rising. *Pacific Drug Review* LVII, 7, (July 1945) p. 46, et seg.

Amino Acids in Nutrition and Medicine. L. Wait Rising. *Western Druggist* (Canadian publication) Vol. 14, No. I (July 1945) p. 52-4.

The New Concept of Blood. L. Wait Rising. *Western Druggist* (Canadian publication) Vol. 14, No. II, (August 1945) p. 62-65.

Pharmacists in the Seattle Coast Guard Sick Bay. L. Wait Rising. *Pacific Drug Review* LVII, 9, Sept. 1945) p. 58-60.



Will Amino Acids Become a Volume Item in Drugstore Sales?  
L. Wait Rising. *Pacific Drug Review* LVII, 10 (Oct. 1945) p. et seg.  
Amino Acids and Proteins. L. Wait Rising. *Pacific Drug Review*  
LVII, 10 (Oct. 1945) p. 45.

Theory and Practice Can be Combined. L. Wait Rising. *Amer.*  
*Jour. Pharm.* Ed. IX, 11 (Oct. 1945) p. 557-9.

Streptomycin, New Medical Star. L. Wait Rising. *Pacific Drug*  
*Review* LVII, 11 (Nov. 1945) p. 47 et seg.

D. D. T.—A Review. L. Wait Rising. *Pacific Drug Review* LVIII,  
No. 2 (Feb. 1946) p. 52 et seg.

The Significance of War Born Drugs. L. Wait Rising. *Pacific*  
*Drug Review* LVIII, No. 4 (April 1946) p. 52 et seg.

**University of Minnesota, College of Pharmacy—**

Fischer, E. B., and Smythe, C. E. Should the Boards Discon-  
tinue the Identification of Vegetable Drugs as Part of the Practical  
Examinations? *Proceedings of the Joint Meeting of District No. 5,*  
*the National Association of Boards of Pharmacy and the American*  
*Association of Colleges of Pharmacy*, pp. 9-11. May, 1945.

Gisvold, Ole, and Benica, W. S. The Synthesis of 2-Hydroxyiso-  
phthalic Acid and Some of Its Derivatives. *Journal of the Ameri-*  
*can Pharmaceutical Association (Sci. Ed.)*, 34, pp. 42-44. 1945.

Gisvold, Ole, and Waller, Coy W. A Phytochemical Investiga-  
tion of *Larrea divaricata* Cav. *Jour. A. Ph. A. (Sci. Ed.)*, 34, pp.  
78-81. 1945.

Gisvold, Ole, and Horn, G. M. A Phytochemical Investigation of  
*Larrea divaricata* Cav. with Special Emphasis on Its Yellow Pig-  
ment. *Jour. of A. Ph. A. (Sci. Ed.)*, 34, pp. 82-86. 1945.

Netz, C. V. One: Four vs. Two: Three Division of Prepharma-  
ceutic and Pharmaceutic Study. *Am. Jour. Ph. Ed.* 9, pp. 553-557.  
1945.

Vitamins in Dental Practice. *Northwestern Druggist*, 53, pp.  
34-45. Nov. 1945

Wilson, C. O. How Colleges of Pharmacy Can Assist State Boards  
in Law Enforcement. *Proceedings of the Joint Meeting of District*  
*No. 5, the National Association of Boards of Pharmacy and the*  
*American Association of Colleges of Pharmacy*, pp. 20-21. May,  
1945

Wilson, C. O., and Gisvold, O. A Critique of the Syllabus of  
Quantitative Pharmaceutical Chemistry. *Am. Jour. of Phar. Ed.*  
9, pp. 47-50. 1945.

Wulling, F. J. A Discussion on Prescription Pricing. *North-*  
*western Druggist*, 53, p. 24. May, 1945.

For Higher Standards. *Jour. of National Ass. of Retail Druggists*,  
67, p. 714. May 7, 1945.

Peter Wendover Bedford—A Retrospect. *Sumac Press, LaCrosse,*  
*Wis.* 12 pages. 1945.

A Period of Harvesting. *Am. Jour. of Ph. Ed.*, 9, pp 425. July,  
1945.

Review of Charles Frederick Chandler, *American Professional*  
*Pharmacist*, 2, p. 366. April, 1945.

**The Fourth Annual Meeting of the American Institute of the  
History of Pharmacy, Inc.**

The fourth annual meeting of the A. I. H. P. which according to the Articles of Organization (Incorporation) was to be held on April 4, 1946, i.e., on the first Thursday of April, had to be postponed because of a lack of the required quorum. It was decided to convene the meeting on Wednesday, June 26th., on the occasion of the presence of the Wisconsin State Board of Pharmacy at Madison.

The president, Dr. Arthur H. Uhl, opened the meeting on June 26, and reported briefly on the development of his plans concerning a closer connection between the A. I. H. P. and the University of Wisconsin. He stressed the fact that the Institute and its director have been given cooperation and recognition on the campus of the university from the very beginning. Dr. Uhl referred to the Institute of the History of Medicine at Johns Hopkins University, Baltimore, Maryland as a pattern of what we are aspiring. Finally, Dr. Uhl reported that on the instigation of the secretary of the A. Ph. A., Dr. Robert P. Fischelis, this year there would be for the first time a joint meeting of the A. I. H. P. and the A. Ph. A. Section on Historical Pharmacy.

The address of the president was followed by a short report of the treasurer, Mr. Sylvester H. Dretzka. Mr. Dretzka told that due to the personal endeavor of the director and the energetic assistance given him by the Executive Vice President of the N. W. D. A., Dr. E. L. Newcomb, money was collected for a new publication the distribution of which may be expected in about two months. As to the budget as such, Mr. Dretzka reported that the cash on hand would suffice to cover the current expenses for about another six months and that the Institute had kept back its campaign for support as far as pharmaceutical industrialists are concerned in order not to cause any confusion with the campaign just now started by the University of Wisconsin Foundation. The statement of Mr. Dretzka that the third Vice-President of the A. I. H. P., Mr. A. J. Horlick, has quite recently assured him once again of his interest in the Institute and of his support in the development of the Institute and its academic connections was received with much enthusiasm.

The director of the A. I. H. P., Dr. George Urdang, reported on the work done during the last year and the recognition it has found. He quoted some of the very appreciative reviews published in the United States and abroad on the book on the *Pharmacopoeia Londinensis* of 1618 the issuance of which had been made possible by a grant of the Hollister fund administered by the State Historical Society of Wisconsin. He mentioned the excellent reception given the brochure on "The Scope of Pharmacy" which was sent to the members and friends of the A. I. H. P. early this year and urged the members of the Institute to attend the first joint meeting of the A. I. H. P. and the Section on Historical Pharmacy of the A. Ph. A. to be held at Pittsburgh on August 28, 9:00 A. M.

In the ensuing discussion the necessity of interesting more people

in the work and the support of the A. I. H. P. was stressed by several members. The following resolution was presented by Mr. Max Lemberger, seconded by Mr. Sylvester H. Dretzka and unanimously adopted.

WHEREAS it is regarded in the interest of pharmacy on the whole, and especially of those pharmacists who have proven their professional aims by joining the American Pharmaceutical Association, to make the knowledge of history and tradition of pharmacy easily available, and its cultivation and utilization the responsibility of American pharmacy at large;

BE IT RESOLVED, that at the meeting to be held at Pittsburgh on Wednesday, August 28, 1946 the question shall be discussed and submitted to the secretary of the A. Ph. A. whether and in what way steps may be taken in order to achieve the goal mentioned.

On motion of Mr. Edwin S. Schweger, seconded by Mr. J. P. Lee the meeting was adjourned until the time of the American Pharmaceutical Association Meeting to be held at Pittsburgh on August 25-30.

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#### ITEMS OF HUMAN INTEREST

Mr. Paul Snyder, University of Colorado '31, now district manager for the Lederle Laboratories and Mr. Robert C. Gasen, a former instructor in pharmaceutical law and now with the Bristol Laboratories were recent campus visitors.

On June 11 at the Midland Hills Country Club, Dean and Mrs. Charles H. Rogers of the University of Minnesota entertained the faculty of the college of pharmacy at a dinner in honor of Professor Gustav Bachman who retires July 1 as Professor Emeritus. After the dinner there was a short speaking program and the presentation of a gift from the faculty.

Dean and Mrs. R. A. Kuever of the state University of Iowa entertained at a dinner in their home on the evening of May 6 in honor of the senior students. The entire faculty, the graduate students, the college secretaries, and their families were in attendance.

Robert Lockie, son of assistant Professor L. D. Lockie is a student in the University of Buffalo's new School of Engineering. A daughter, Mary, is now employed at the University's Lockwood Memorial Library.

Dr. Mary Swisher Kumro of the University of Buffalo is vacationing in Colorado.

## New Books

**First Aid in Emergencies** by Eldridge L. Eliason, A. B., M. D., Sc. D., F. A. C. S., Professor of Surgery, University of Pennsylvania, School of Medicine. Eleventh Edition. 260 pages, 126 illustrations. J. B. Lippincott Company. Price \$1.75.

This text now in the second printing of the eleventh edition has held a leading position in the field for many years. It is more complete in textual matter than any textbook that has been called to our attention. Of special value are the numerous illustrations covering the uses and applications of bandages, the control of hemorrhage, the treatment of dislocations and fractures, the methods of transportation, and the handling of suffocation. Chapters on the treatment of unconscious persons, of poisoning, of plant poisons, of medical emergencies, of transmissible diseases and the significance of abdominal pain are well covered. A final chapter printed on blue instead of that white paper deals with safety precautions and first aid in civilian defense in times of peace and war is well worthwhile. Printed at the top of each page is a word indicating the subject matter on the page which facilitates the finding of what one wants to know, quickly, which is an essential in first aid work.

R. A. L.

**The 1945 Year Book of General Therapeutics** edited by Oscar W. Bethea, Ph. M., M. D., F. A. C. P., Professor of Clinical Medicine, Tulane University, School of Medicine (retired). 456 pages, illustrated. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4. Price \$3.00.

The Year Books have become indispensable to medical literature and the 1945 Year Book of General Therapeutics is a fine example of the excellence and the worthiness of the series. The Editor calls attention to the fact that during the last year of the war medical literature from Continental Europe had been reduced almost to the vanishing point but from the rest of the world there has come an increasing amount of high class material, especially does he commend the standard maintained by the Latin American countries. The value of a therapeutic agent, of course is not to be judged by the amount of space devoted to the description of its uses but it is more or less indicative of the interest in it and the trend of therapeutic investigation. The fact that 121 out of a total of 443 pages of descriptive matter is devoted to the therapy of penicillin is impressive. The sulfones attest to their continued popularity with 42 pages. The antimalarials, the antisypilitics and the antirheumatics are given the same amount of space and the same is true for the drugs that act on the heart and blood vessels. Vitamins are reduced to 25 pages, hormones to 21, antibodies and antigen to 13. Anesthetics and sedatives are still a live subject with 35 pages and the best treatment of burns is still a debatable question. No field is left untouched from thiouracil to the value of the latest tests and techniques. All of which goes to show that medicine is still in its infancy as an experimental science and the practice of medicine is still and probably always will be the **practice**

of medicine. The Year Book of General Therapeutics belongs in the library of every college of pharmacy as well as in the library of every pharmacist since it is essential that he keep in touch with the progress and trends in the medical field.

R. A. L.

**The Science and Art of Perfumery**, by Edward Sagarin. Givaudan-Delawanna, Inc. First Edition. 1945. 268 pages. 18 photographs. McGraw Hill Book Co., Inc. Price \$3.00.

This book gives a birds-eye view of the whole perfume industry. It not only gives the student of pharmacy an introduction to the production of natural and synthetic perfumes but it is fascinatingly written so the public can appreciate this vast field of odors in which every human being is interested. It can be read with profit by any intelligent person and should be available in every pharmacy library.

R. A. L.

**Cosmetics and Dermatitis** by Louis Schwartz, M. D., Medical Director, U. S. Public Health Service; Chief Dermatoses Section, Division of Industrial Hygiene; Adjunct Professor in Dermatology, Georgetown University School of Medicine; Associate Clinical Professor in Dermatology and Syphilology, New York University, College of Medicine; Consultant, Office of Price Administration and Samuel M. Peck, M. D., Medical Director (R) U. S. Public Health Service; Associate Attending Dermatologist, Mt. Sinai Hospital, New York City; Attending Dermatologist and Syphilologist, Skin and Cancer unit of the New York Post-Graduate Medical School and Hospital of Columbia University; Diplomate of the American Board of Dermatology and Syphilology. 1946. 189 pages, 20 full page illustrations with frontispiece in color. Paul H. Hoeber, Inc. Price, \$4.00.

This book, written by two distinguished dermatologists in the Public Health Service, is a guarantee of authoritativeness. The first chapter deals with the anatomy and physiology of the skin and its appendages. The chapter has several subdivisions which deal with the various skin structures such as sweat glands, sebaceous glands, skin pigment and percutaneous absorption. Uniquely, a rather extensive bibliography is given at the end of each subsection instead of at the end of the chapter. It is a good idea when one wishes to seek information on a definite point. This plan is also carried out in the rest of the book. The chapter on allergic dermatoses states that most of the dermatoses caused by cosmetics are due not so much to the irritant properties of the cosmetic as to the fact that the user was or had become sensitized to the cosmetic. Other chapters deal with the possible causes of cosmetic dermatitis; occupational dermatitis among barbers, hairdressers, and beauticians; the action of creams and their use and misuse; the dangers and uses of dentifrices, deodorants, depilatories, hair, nail and lip preparations, perfumes, cleansers and suntan preparations; the treatment of cosmetic dermatitis; the beneficial value of cosmetics; cosmetic advertising; and a list of cosmetic colors approved by the Cosmetic Division of the Food and Drug Administration. The book is invaluable to the physician. I believe it is of even greater value to the druggists who have more contacts with the users of cosmetics than any other group and should be in a position to give intelligent advice and warnings about the use of

cosmetics. Finally, it is a book that can be read by the intelligent layman with profit.

R. A. L.

**Cinchona in Java, The Story of Quinine** by Norman Taylor, editor of The Garden Dictionary and botanical editor of Webster's New International Dictionary; Director of the Cinchona Products Institute in New York with an introduction by Pieter Honig, Dutch scientist with years of experience in the Netherlands Indies; Chairman of International Sugar Cane Technologists; editor of Sugar Archives; Director of the Rubber Institute, Britenzorg and during the war he served as a member of the Board for the Netherlands Indies, Surinam and Curacao in New York. 1945. 87 pages. Profusely illustrated with photographs. Greenberg: Publisher. Price, \$2.50.

Any publication that has to do with Cinchona and malaria is news and is read with interest. This is probably due, as the publisher states, to the fact that "Cinchona is one of those New World plants which, like the potato, has become of world significance." In this book the author has written the dramatic story of quinine and malaria and shows how nature has provided a remedy for one of mankind's greatest enemies. In the historical resume he brings out the fact that the British and Dutch attempts to colonize the Indies with Cinchona had a humanitarian and not financial objective. The story of the formative years and the final goal are most instructive. Books of this type are of great value to the pharmacy student because they give him an airplane view of the subject before he enters into study of details.

R. A. L.

**A TRIBUTE TO JOHN GROVER BEARD\***  
THE UNIVERSITY OF NORTH CAROLINA  
CHAPEL HILL, NORTH CAROLINA

SCHOOL OF PHARMACY  
OFFICE OF THE DEAN

April 19, 1946

Dean R. A. Lyman  
The College of Pharmacy  
The University of Nebraska  
Lincoln, Nebraska  
Dear Old Friend:

Word has just come to me of your intended retirement as teacher at Nebraska, but if I had not heard it from an impeccable source I would have scoffed at the idea since you are still so productive, so virile, so vigorous that the notion seems ridiculous. Certainly talent is going to be wasted; a normally good policy is going to be made absurd; if you even dream of going into retirement in the sense of stopping creative work for you still have so darned much good stuff in you that those who know you well will be shocked into substantial "cussing" at the very thought.

May I talk a moment as I think of days and times I have known you and have greeted you annually as we have traveled from one convention city to another of the American Association of Colleges of Pharmacy. The first time I believe was in Cleveland way back yonder



when you brashly suggested to one who believed you that I would make a good local secretary for the American Pharmaceutical Association when it was to meet in Asheville that year and your idea was followed. From almost the beginning I saw in you not only a leader to follow, but a friend utterly and completely to trust. If any one in a foolish way should think of you as a hard boiled Westerner with a crusty exterior, they fail to see the tender hearted sentimentalist, who down where things count, would give his last shirt and his last grain of boundless energy supporting his friend if such a friend was in any sort of need. For quite a time, in writing you, I have been subscribing myself as "Affectionately yours" meaning literally that so far as our relationship is concerned I feel tenderly, faithfully, warmly as your friend. I am delighted that Secretary Taylor is giving me and others of your admiring friends this opportunity of paying you a tribute that you can have down in black and white as a memorial that you can preserve and look back upon many years from now when you finally do stop working and while resting turn to your Memorabilia and reflect upon what was what 'way back when.'

Retiring? Absurd! An author and leader of a monumental work just as it begins to serve as a guide to youth? Nonsense! A monthly editor who counsels his fellow workers? Pshaw! A writer who is never too busy to stop whatever he is doing when his help is needed. A dean who helps fellow deans who rely upon his advice? Oh man, it is damned foolishness! Cannot you say to your president: "Get me an additional job as well as the one I have been holding down and I'll show you what a man who has just learned *how* to work can do when somebody even suggests retirement to him?" Dear old worthy good friend, I don't believe a word of this stuff about "Lyman retiring" even if he has been in the saddle for forty-two years! Tell me it isn't true.

Affectionately yours,

John Grover Beard, Dean

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\* See Editor's Page.

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#### **INSPECTION OF COLLEGES DEFERRED PRESS RELEASE**

The following statements with regard to policy are released by the American Council on Pharmaceutical Education at this time because they are believed to be of immediate importance to the colleges of pharmacy:

##### **Overcrowding in Colleges of Pharmacy and Lowering of Teacher Qualifications**

The Council is aware that all colleges of pharmacy will probably be faced with the temptation to enroll students far beyond their teaching and laboratory facilities and that some of the colleges of pharmacy may be inclined to yield to this temptation. The unsatisfactory conditions brought on by overcrowding can only result in a lowering of educational standards. The Council will, therefore, view with disfavor the overcrowding of colleges of pharmacy and will give great weight to this factor when acting upon accreditation.

The Council is also aware of the fact that under present conditions

it may be necessary for colleges to adopt temporary expedients in maintaining an instructional staff. Such improvisations, particularly when they mean the employment of poorly qualified teachers, do not satisfy the standards of the Council and it is expected that temporary appointees of this kind will be replaced by fully qualified teachers as rapidly as possible.

**Policy with Respect to the Inauguration of Formal Reinspections  
of the Colleges of Pharmacy**

It was planned to begin formal reinspections of the colleges last Fall, but the difficulty of obtaining transportation and hotel accommodations and the unsettled conditions in the colleges due to the influx of unprecedented numbers of students made the carrying out of these plans inadvisable. As a consequence, the beginning of the reinspection program was deferred until this Fall. At the present moment, however, it would seem advisable to again defer the inauguration of the reinspection program, at least insofar as it applies to most of the colleges, because of the pharmaceutical survey which is rapidly getting under way.

As you no doubt know, the survey was inaugurated last month and it is the opinion of the Director that it would be advisable to defer regular reinspections until after the investigational part of the survey is completed, because reinspection during this period of readjustment in the colleges might impede the progress of the survey. Of course, this would not apply to the colleges which have been given provisional accreditation or to those in which conditions are such as to require immediate attention. In other words, the Council looks to all accredited colleges of pharmacy to maintain proper educational standards during this period and will make reinspections in all cases where there is any indication that the Council's standards are not being met.

August 2, 1946

A. G. DuMez, Secretary.

**A NEW JOURNAL**

The Journal of General Education, published quarterly by the State University of Iowa, under the editorial leadership of Dean Earl James McGrath, is intended to serve instructors and administrative officers in liberal arts colleges, professional schools, teachers colleges, junior colleges, and the secondary schools. More specifically, it is designed to provide an outlet for thoughtful discussions of the issues and experiments of general education. To assure representative and timely content, a board of distinguished editorial consultants will assist the editor each quarter in selecting the papers to be included. Subscription price is two dollars per year. When sending notice of the new publication to the editor of the American Journal of Pharmaceutical Education, Dr. McGrath wrote as follows: "On October 1, 1946, the State University of Iowa will issue a new publication, *The Journal of General Education*. The purpose of this Journal, the board of editorial consultants, which will exercise general editorial supervision of the publication, and the information concerning dates of publications and the subscription price are described in the attached announcement. I would appreciate it very much if you could reproduce the information in this announcement in an early issue of your Journal. I think *The Journal of General Education* will supplement the articles which appear in your fine publication."

# INSTITUTIONS HOLDING MEMBERSHIP IN THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

## New Jersey

Rutgers University, The State University of New Jersey, New Jersey College of Pharmacy, Newark. (1923)  
Thomas D. Rowe, Dean

## New York

University of Buffalo, School of Pharmacy, Buffalo. (1939)  
A. B. Lemon, Dean  
Columbia University, College of Pharmacy of the City of New York. (1939)  
Charles W. Ballard, Dean  
Fordham University, College of Pharmacy, New York. (1939)  
Charles J. Deane, Acting Dean  
Long Island University, Brooklyn College of Pharmacy, Brooklyn. (1939)  
Hugo H. Schaefer, Dean  
Union University, Albany College of Pharmacy, Albany. (1945)  
Francis J. O'Brien, Dean

## North Carolina

University of North Carolina, School of Pharmacy, Chapel Hill. (1917)  
J. Grover Beard, Dean

## North Dakota

North Dakota Agricultural College, School of Pharmacy, Fargo. (1922)  
William F. Sudro, Dean

## Ohio

Ohio Northern University, College of Pharmacy, Ada. (1925)  
Rudolph H. Raabe, Dean  
The Ohio State University, College of Pharmacy, Columbus. (1900)  
Bernard V. Christensen, Dean  
University of Toledo, College of Pharmacy, Toledo. (1941)  
George L. Baker, Dean\*  
Bess G. Emch, Acting Dean  
Western Reserve University, School of Pharmacy, Cleveland. (1902)  
Arthur P. Wyss, Dean

## Oklahoma

University of Oklahoma, School of Pharmacy, Norman. (1905)  
David B. R. Johnson, Dean

## Oregon

Oregon State College, School of Pharmacy, Corvallis. (1915)  
George E. Crossen, Dean

## Pennsylvania

Duquesne University, School of Pharmacy, Pittsburgh. (1927)  
Hugh C. Muldoon, Dean  
Philadelphia College of Pharmacy and Science, Philadelphia. (1900)  
Ivor Griffith, Dean  
Temple University, School of Pharmacy, Philadelphia. (1928)  
H. Evert Kendig, Dean  
University of Pittsburgh, Pittsburgh College of Pharmacy, Pittsburgh. (1900)  
Edward C. Reif, Dean

\*On leave of absence.

## Philippines

University of the Philippines, College of Pharmacy, Manila. (1917)  
Patrocinio Valenzuela, Dean

## Puerto Rico

University of Puerto Rico, College of Pharmacy, Rio Piedras. (1926)  
Luis Torres-Diaz, Dean

## Rhode Island

Rhode Island College of Pharmacy and Allied Sciences, Providence. (1926)  
W. Henry Rivard, Dean

## South Carolina

Medical College of the State of South Carolina, Charleston. (1940)  
William A. Prout, Director  
University of South Carolina, School of Pharmacy, Columbia. (1928)  
Emery T. Motley, Dean

## South Dakota

South Dakota State College, Division of Pharmacy, Brookings. (1908)  
Floyd J. LeBlanc, Dean

## Tennessee

University of Tennessee, School of Pharmacy, Memphis. (1914)  
Robert L. Crowe, Dean

## Texas

University of Texas, College of Pharmacy, Austin. (1926)  
William F. Gidley, Dean

## Virginia

Medical College of Virginia, School of Pharmacy, Richmond. (1908)  
Wortley F. Rudd, Dean

## Washington

State College of Washington, School of Pharmacy, Pullman. (1912)  
Pearl H. Dirstine, Dean  
University of Washington, College of Pharmacy, Seattle. (1903)  
Forest J. Goodrich, Dean

## West Virginia

West Virginia University, College of Pharmacy, Morgantown. (1920)  
J. Lester Hayman, Dean

## Wisconsin

University of Wisconsin, School of Pharmacy, Madison. (1900)  
Arthur H. Uhl, Director

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## FELLOWSHIPS IN PHARMACY

To meet the demonstrated need for trained teachers and researchers in the field of pharmacy, the American Foundation for Pharmaceutical Education announces a limited number of Fellowships for students seeking graduate degrees in pharmaceutical subjects.

These Fellowships are open to students (men or women) qualified for registration in approved graduate schools (or colleges) for one or more of the following major fields:

**PHARMACY**

**PHARMACEUTICAL CHEMISTRY**

**PHARMACOLOGY**

**PHARMACOGNOSY**

**(or closely related subjects)**

Each Fellow will receive from the Foundation a stipend to cover the year of his appointment, plus an allowance for tuition and miscellaneous term bills. Fellowships are renewable for one year.

For further information concerning Foundation Fellowships, including application forms, write directly to the

**Board of Grants,  
AMERICAN FOUNDATION FOR PHARMACEUTICAL  
EDUCATION**

**330 West 42nd Street**

**New York 18, N. Y.**

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